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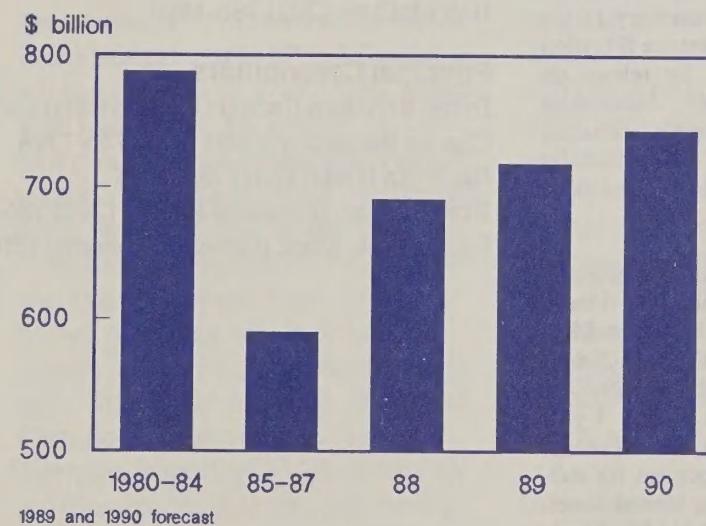
AFO-37
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Agricultural Income and Finance

Situation and Outlook Report

Equity Continues Recovery



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Summary

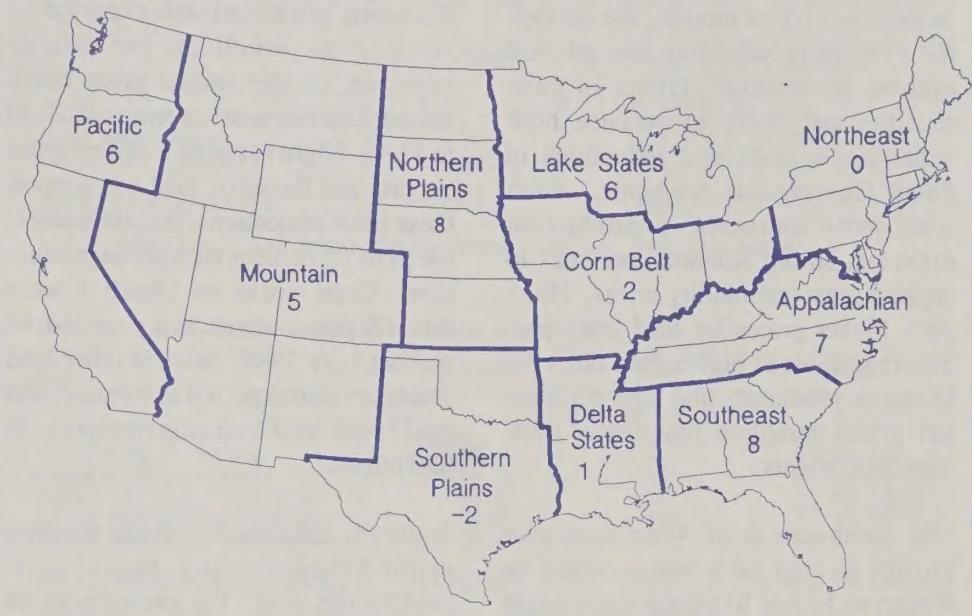
The improved outlook for 1990 farm sales is strengthening income prospects. Gains in cash receipts are likely to outpace both expense increases and reductions in direct Government payments. Although production is expected to increase slightly, strong demand continues to support most commodity prices. However, higher prices for feed grain producers also mean higher feed costs for livestock producers, and stronger market prices translate into lower deficiency payments.

Net cash income is forecast at \$55 to \$59 billion, up \$1 billion from the previous estimate and \$1 to \$5 billion above last year. Net farm income probably will range between \$47 and \$51 billion, up \$2 billion from the earlier estimate and about the same as the \$49 billion last year. The change in inventory added \$6 billion to 1989 income, mainly because wheat and corn production were up sharply from 1988 and average annual prices were relatively high. With continued strong demand for slightly higher production, an additional \$4 billion in inventories could accrue.

While net cash income is forecast to grow at the national level, it likely will decline 2 to 3 percent in the Northeast, remain unchanged in the South Central region, grow about 6 to 8 percent in the Southeast and West, and rise 8 to 9 percent in the Midwest. The Midwest may account for nearly 65 percent of the total gain expected in the farm sector.

On the balance sheet side, the value of farm assets (excluding operator household assets) is expected to rise to between \$870 and \$880 billion by the end of 1990, due mainly to rising real estate values, which are forecast to increase 3 to 4 percent. The increase reflects the higher returns from current

Figure 1
Percent Change in 1989 Farmland Values



income portrayed in the income statement. A slight uptrend in interest rates is not expected to override the gains from returns.

Asset values are projected to rise for the fourth straight year in 1990, following a 3.0-percent gain in 1989. Real estate assets advanced 3.4 percent in 1989, rising in all farm production regions except the Southern Plains. Strongest gains were recorded in the Southeast (where values have risen for 4 consecutive years), Northern Plains, and Appalachia. Value per acre increased 5 to 6 percent in the Pacific, Mountain, and Lake States regions. The Delta and Corn Belt regions increased only 1 and 2 percent, respectively. Adjustment for inflation reveals that the real value of farmland fell slightly during 1989.

Preliminary indications are that total farm business debt declined 2 percent in 1989, marking the sixth consecutive

year of debt reduction. The bulk of this decline was in Farmers Home Administration loan balances, as the Agency was legally enabled to deal with its loan delinquency problems. Demand for agricultural loans did not increase rapidly, as farmers remained cautious about expansion. Another year of relatively high net cash income, coupled with delayed receipt of 1988 drought relief payments, provided farmers with adequate cash to meet their needs without requiring additional credit. The lack of increased borrowing suggests that both farmers and lenders remained conservative about the permanence of the farm sector's return to financial health.

Farm business equity increased for the third consecutive year, posting a net gain of 4 percent. Continuing increases in asset values and relatively stable debt are expected to raise equity 3 percent in 1990, a gain of nearly \$22 billion.

Farm Economy Looks Strong in 1990

Strong demand could push crop receipts to a record high. Red meat and poultry receipts should also increase. With only slight rises in production expenses, incomes should strengthen.

In the past several months, the outlook for 1990 farm sales has strengthened income prospects. Gains in cash receipts are likely to outpace both expense increases and reductions in direct Government payments. Even with some increases in production expected, strong demand continues to support most commodity prices. However, higher prices for feed grain producers also mean higher feed costs for livestock producers, and stronger market prices translate into lower deficiency payments.

The combination of 4- to 9-percent growth in crop sales and as much as 4-percent higher livestock sales could raise total receipts to between \$162 and \$168 billion in 1990. Net cash income is forecast at \$55 to \$59 billion, up \$1 billion from previous estimates and \$1 to \$5 billion above last year. Net farm income probably will range between \$47 and \$51 billion, up \$2 billion from the earlier estimate and about the same as the \$49 billion in 1989. At least half of 1990 cash grain receipts will be from sales of crops harvested and stored (added to inventory) during 1989. The 1990 inventory adjustment will be less than in 1989 because cash grain production was up over 35 percent last year, compared with an expected 10-percent increase this year.

Tight Supplies and Strong Demand Leading to Record Crop Sales

Farmers may sell \$2 to \$4 billion (12 to 24 percent) more feed grains and hay in 1990, which would raise crop receipts to a record \$77 to \$81 billion. Wheat production could be up about 30 percent this year with adequate spring precipitation for winter wheat, and prices may average 15 to 20 percent less than during 1989.

Fall corn prices are not expected to weaken as much as previously expected, so the annual price could remain near last year's average of \$2.40 to \$2.45. Higher estimates of feed grain exports and domestic feed use support these price projections, despite a possible 5- to 10-percent increase in production. Corn stocks on March 1 were down 8 percent from last year and 40 percent from 1988. Sales of other feed grains are also expected to increase, and could push total feed crop receipts over \$20 billion.

Soybeans and cotton could be the only major crops showing weaker cash receipts this year. The annual price of soybeans may average about 15 percent less than last year, and with little change in production, soybean sales could be off as much as 9 percent. Despite a 30-percent increase in production, cotton sales could dip slightly with weaker demand.

Sales of Red Meat and Poultry Swell

Reduced pork production could push hog prices up \$10 per hundredweight from last year's average, while stable beef production could lead to a 3- to 4-percent increase in prices. Production of turkeys and broilers may be up 6 to 7 percent, but price declines of 6 to 7 percent will probably keep total poultry and egg receipts about \$15 billion. Cattle and calf sales are projected to gain 2 percent over last year, while hog sales could grow as much as 20 percent. Even with slightly larger production, lower prices may bring dairy sales down about 5 percent from 1989's record. Total livestock receipts could be up almost \$3 billion from last year, and are likely to be between \$84 and \$87 billion.

Modest Feed Cost Contraction Expected

The 15-percent decline in feed costs that was projected last fall has been moderated by the recent behavior of feed grain prices. The 1990 index of prices paid for feed was forecast to fall 20 percent from 1989's, but it is currently expected to be down less than 10 percent. Feed expenses may drop only 2 percent and stay within \$1 billion of last year's \$24 billion. Number of cattle on farms are virtually the same as last year, but hog inventories are down slightly from March 1, 1989. Uncertainty about feed costs may be behind producers' cautious approach to herd expansion, despite higher hog and cattle prices.

Expenditures for some manufactured inputs, operating and overhead expenses are likely to increase 3 to 5 percent. Interest expense is expected to stay near \$15 billion for the third consecutive year. Total cash expenses could be up slightly to between \$121 and \$124 billion. Total production expenses could show the same relatively modest increase and range from \$142 to \$147 billion this year.

Direct Government Payments Could Fall 15 Percent

Direct payments to farmers might fall \$2 billion as disaster assistance declines from nearly \$3 billion in 1989 to less than \$1 billion in 1990. The trend to lower market prices for wheat, as well as reduced acreage set-aside requirements, may result in higher deficiency payments under the wheat program. However, recent price strength could lower payments for the other program crops, leaving total deficiency payments about the same as in 1989. Total direct payments received in 1990 are expected to be 15 percent less than last year, and 45 percent less than in 1987.

Net cash income could rise 5 to 6 percent from last year, reaching \$55 to \$59 billion. Net farm income should range between \$47 and \$51 billion, about the same as last year. The change in inventory added \$6 billion to 1989 income, mainly because wheat and corn production were up sharply from 1988 and average annual prices were relatively high. With continued strong demand for slightly higher production, an additional \$4 billion in inventories could accrue in 1990. In constant (1982) dollars, however, net farm income could fall 3 percent.

The overall 1990 financial picture is very positive for U.S. agriculture:

- Crop receipts climbing to a record level; corn leading the way
- Livestock receipts up, led by hogs
- Net cash flow increasing 10 percent
- Asset values up 2 to 4 percent; equity up 3 percent

Table 1--Record high crop sales and record-tying livestock sales continue pushing total receipts

	1988	1989	1990F
Billion dollars			
Crop receipts	72.6	74	77 to 81
Livestock receipts	78.9	84	84 to 87
TOTAL CASH RECEIPTS	151.4	158	162 to 168

F = forecast. See Appendix for more detailed receipts data.

Table 2--Production expenses holding the line

	1988	1989F	1990F
Billion dollars			
Farm-origin inputs	38.4	41	38 to 42
Manufactured inputs	19.4	22	21 to 24
Total interest charges	15.2	15	14 to 16
Other operating expenses	32.3	34	33 to 37
Other overhead expenses	29.6	31	31 to 33
TOTAL PRODUCTION EXPENSES	135.0	142	142 to 147
Cash expenses	114.4	121	121 to 124

F = forecast. See Appendix for more detailed expenses data.

Figure 2
Real Cash Receipts Falling Short of 1970's

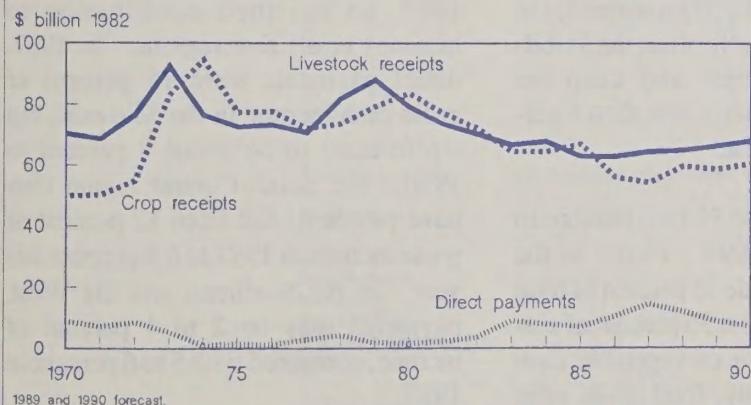


Figure 3
Trends In Real Income and Expenses

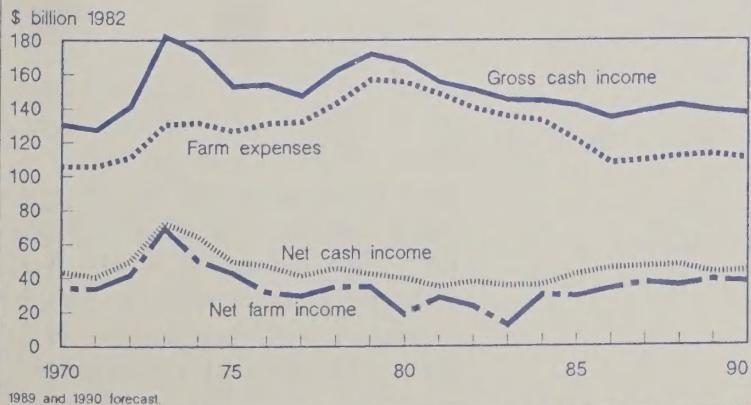
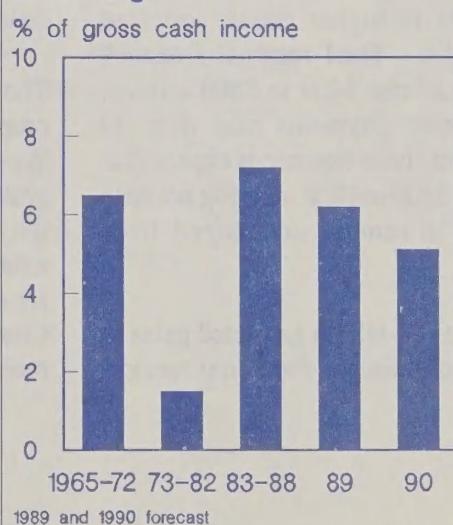


Figure 4
Direct Government Payments Declining



Farming Regions Have Different Outlooks

The Midwest will account for about 65 percent of the total gain in net cash income.

Although farm sector net cash income may grow 5 to 6 percent in 1990, it may be down 2 to 3 percent in the Northeast and unchanged in the South Central region. The Midwest's increase is nearly 65 percent of the total gain expected in the farm sector. The Southeast and West could see net cash income grow about 6 to 8 percent in 1990.

Net cash income may be off slightly in the Northeast, which provides about 20 percent of U.S. dairy receipts and 10 to 15 percent of poultry cash receipts. If poultry receipts grow and dairy receipts decline as expected in 1990, livestock cash receipts could dip \$100 million. Although the Northeast provides only 3 to 8 percent of total corn, fruit, and vegetable receipts, these crops are important locally and are responsible for higher crop receipts.

The South Central region accounts for about 25 percent of total poultry receipts, over 50 percent of cotton sales, and 20 to 25 percent of feed grain receipts. Most of the 5-percent increase in crop receipts in this region can be attributed to higher cotton and feed grain sales. Total regional livestock sales could rise \$400 to \$500 million. Government payments may drop 30 percent and cash expense is expected to increase \$200 million, causing net cash income to remain unchanged from 1989.

The \$2- to \$4-billion projected gains in total food grain and feed crop receipts

would boost Midwest crop receipts. Since the Midwest accounts for 45 percent of all food grain sales and 70 percent of feed crops, crop cash receipts could be up 8 to 10 percent in 1990. Higher hog prices are likely to nudge up livestock receipts. Although direct payments may drop more than 10 percent (\$700 million), and cash expenses could climb \$900 million, net cash income could increase 8 to 10 percent in the Midwest.

Higher cash receipts are projected for two of the Southeast's major commodities, tobacco and poultry. Although fruit and vegetable receipts are expected to increase nationally, the winter crops were damaged by frost in Florida. The Southeast also accounts for 15 to 20 percent of oil crop receipts. Soybean prices could be down 15 to 20 percent from last year, but peanut sales may be up nearly 25 percent nationally. However, a \$200-million drop in Government payments and \$200-million rise in expenses may partially offset the \$1-billion gain in receipts and keep net income from climbing more than 6 percent in the Southeast.

The West may have \$1 billion more in crop receipts in 1990. Farms in the West usually provide 25 percent of food grain receipts, almost 35 percent of cotton, and 55 percent of vegetable cash receipts. Nationally, food grain sales are expected to be up nearly 10 percent. Cotton and vegetables could boost crop receipts in the West by almost \$250

million. With little change in direct payments and only a small increase in cash expenses, net cash income could rise the same amount as crop receipts, or 8 percent from 1989.

Total direct Government payments increased from \$7.7 billion in 1985 to \$16.7 billion in 1987, then decreased to \$11 billion in 1989, and may drop to \$9 billion this year. Regional shares of payments have been fairly stable because farms producing program crops do not change location. The Midwest grows the most feed and food grains, and has received 55 to 65 percent of direct payments; the South Central region has accounted for 15 to 24 percent; the West, 11 to 16 percent; the Southeast, 5 to 7 percent; and, the Northeast has received less than 3 percent of all direct payments in the last 5 years.

Just as payments have declined since 1987, so has their contribution to incomes in all five regions. In 1987, direct payments were 15 percent of gross cash income in the Midwest, but are forecast to be about 7 percent in 1990. The South Central region may have payments fall from 12 percent of gross income in 1987 to 6.5 percent this year. In the Southeast and the West, payments may be 2 to 4 percent of income, compared with 5 to 6 percent in 1987.

Midwest receipts from both crops and livestock have risen steadily over the past few years. While net income fell there last year, it should rebound this year.

Table 3--Income components by region

	Cash receipts		Government payments	Cash expenses	Gross income	Net income
	Crops	Livestock				
1987						
				Billion dollars		
Northeast	3.5	6.4	0.3	6.6	10.5	3.9
Midwest	23.4	33.5	10.5	46.9	69.7	22.8
Southeast	10.8	11.1	1.2	14.8	24.1	9.4
South Central	6.7	11.8	2.7	15.4	22.3	6.9
West	19.3	12.9	2.1	23.8	35.4	11.6
1988						
Northeast	3.7	6.5	.2	6.9	10.7	3.9
Midwest	26.9	33.9	9.4	49.5	72.3	22.8
Southeast	12.1	11.6	.9	15.6	25.7	10.1
South Central	9.1	12.8	2.2	16.7	25.1	8.4
West	20.7	14.1	1.7	25.6	37.7	12.1
1989F						
Northeast	3.8	7.2	.2	7.7	11.6	3.9
Midwest	27.9	36.6	6.0	52.6	72.2	19.6
Southeast	12.3	12.4	.8	16.7	27.0	10.3
South Central	8.8	13.1	2.3	17.3	25.2	7.9
West	21.3	14.5	1.5	26.2	38.4	12.2
1990F						
Northeast	4.0	7.1	.2	7.8	11.6	3.8
Midwest	30.3	37.4	5.3	53.5	74.8	21.3
Southeast	13.1	12.7	.6	16.9	27.9	10.9
South Central	9.3	13.6	1.6	17.5	25.4	7.9
West	22.4	14.7	1.6	26.6	39.8	13.2

F = forecast.

Table 4--Direct Government payments decline as share of gross cash income

Region	1987	1988	1989F	1990F
	Percent			
Northeast	2.7	2.2	1.9	1.3
Midwest	15.1	13.0	8.3	7.1
Southeast	4.8	3.6	3.0	2.1
South Central	12.2	8.8	9.2	6.5
West	5.9	4.5	4.0	3.9

F = forecast.

Income Up for Most Types of Farms

Net cash income is projected up \$2.6 billion for crop farms and \$600 million for livestock farms. Cash grain farms contribute the most to total income and will account for the largest single increase. Dairy farms may experience income declines.

Aggregate income and expense estimates for the farm sector do not fully reflect conditions of different types of farms. Although most farms produce more than one commodity, a single commodity or group of commodities often accounts for at least half of total sales. Grouping farms according to the commodities providing 50 percent or more of the operation's cash receipts provides a more complete picture of the farm situation.

In order to distribute forecasts of expense and income items among farm types, analysts assume that shares do not change from year to year, and farms do not shift from one enterprise type to another. Forecasts for specific types of farms are more sensitive to subsequent revisions of production and price data than farm sector totals. Specialization implies that a single commodity or input can have a large impact on groups of farms with similar enterprises.

Livestock Farms More Numerous than Crop Farms

There are fewer crop farms than livestock farms, according to the 1988 Farm Costs and Returns Survey (FCRS). Over 60 percent of all farms sell mostly livestock and livestock products. The four most numerous farm types are: red meat producers (50 percent of all farms), cash grain (nearly 20 percent), dairy farms (9 percent), and other crop (7 percent).

Some types of farms are more specialized than others (table 5). Cash grain farms account for the bulk of grain and oil crop cash receipts, but red meat farms also produce crops and receive 10 to 15 percent of cash grain receipts. Almost all fruit is sold by fruit-vegetable farms, but these farms sell less than 80 percent of all vegetables. Poultry and milk sales are almost exclusively from poultry and dairy operations, respectively.

In 1989, net cash income probably was steady for livestock farms and down 8 to 10 percent for crop farms (table 6). Crop farms could experience an 8-percent increase this year, while livestock farms' net cash income may grow slightly less than 5 percent. Cash expenses were up 5 to 6 percent for both crop and livestock farms last year. Expenses of livestock farms may be up less than 1 percent this year, if feed costs remain below 1989, but crop farms may have costs rise 2 to 3 percent.

Some crop and livestock farms are affected disproportionately by changes in receipts and expenses. Cash grain farms account for 23 to 25 percent of gross cash income and about 20 percent of cash expenses. While red meat farms accumulate 30 percent of gross cash income, they usually register 37 percent of cash expenses. However, expenses that are projected to increase in 1990 involve inputs used more by crop than livestock enterprises: fuels, pesticides, marketing, storage, and transportation.

Lower feed costs are partially offset by higher prices of replacement and feeder livestock. Consequently, the red meat sector may account for only 30 percent of the projected expense rise, and cash grain farms may register 24 percent. For dairy farms, cash expenses may be up slightly, due more to higher energy, labor, and marketing costs than to replacement livestock. Cotton farms could see a 2-percent rise in expenses due to higher pesticide costs.

Cash grain farms usually receive over 50 percent of total direct Government payments. However, livestock farms collect about 35 percent, with dairy farms accounting for 7 to 8 percent and red meat farms about 25 percent. Despite a 15-percent drop in direct payments this year, cash grain farms could still see net cash income rise more than 10 percent because of a nearly \$3-billion boost from crop sales. Dairy farms could have sharply lower net cash income this year, despite lower feed costs. Both direct payments and livestock receipts (mostly milk sales) are expected to fall, reducing gross income to dairy farms nearly 5 percent (over \$1 billion). For red meat producers, a \$400-million decline in Government payments may be almost completely recovered in higher crop receipts. With 5-percent higher livestock receipts, based on forecasts of record hog and cattle sales, net income could climb 15 to 20 percent.

Definition of Farm Types

Farms were classified into types according to the commodity or group of commodities that accounted for at least half of crop and livestock receipts (market sales of crops and livestock plus CCC loans). For example, cash grain farms had at least 50 percent of receipts from wheat and other food grains, corn and other feed grains, and soybeans and other oil crops. Sales of a single cash grain did not necessarily account for half of total commodity receipts. This classification system corresponds to the Standard Industrial Classification (SIC) system used by the U.S. Department of Commerce.

Farm Type	SIC code	At least half of receipts from:
Cash grain	011	Wheat, rice, corn, sorghum, soybeans, sunflowers, other cash grains
Cotton	0131	Cotton
Tobacco	0132	Tobacco
Fruit-vegetables	0134, 016, 017	Potatoes and other vegetables, fruits, and tree nuts
Nursery-greenhouse	0181	Ornamental and nursery products
Other crops	0191	Crops, but not in above categories
Red meat	021	Cattle, calves, hogs, and sheep
Dairy	024	Milk and other dairy products
Poultry and eggs	025	Broilers, other chickens, eggs, and turkeys

Table 5--Specialized farms' proportions of cash receipts 1/

Commodity	Cash grain	Cotton	Tobacco	Farm type			
				Fruit-veg.	Red meat	Poultry	Dairy
Feed grains	80	1	1	1	10	*	2
Food grains	74	2	*	1	14	*	2
Oil crops	76	2	2	*	15	*	2
Cotton	10	78	*	1	3	0	*
Tobacco	4	0	78	1	7	0	4
Vegetables	5	*	1	77	1	0	2
Fruit	*	*	*	95	1	*	2
Beef	5	*	*	*	87	*	5
Pork	10	*	*	*	85	*	2
Sheep & lambs	5	*	0	*	91	*	*
Poultry & eggs	*	*	*	*	1	94	*
Milk	*	0	*	*	1	0	97

* = less than 0.5 percent. 1/ For example, cash grain farms account for 80 percent of all cash grain receipts, 74 percent of all food grain receipts, 76 percent of all oil crops receipts, etc.

Table 6--Cash income and expenses by farm type, 1989-90

Farm type	Gross cash income		Cash expenses		Net cash income	
	1989F	1990F	1989F	1990F	1989F	1990F
Billion dollars						
Cash grain	40.5	42.6	23.8	24.2	16.7	18.4
Cotton	5.5	5.6	3.1	3.2	2.4	2.3
Tobacco	2.5	2.8	1.9	2.0	.6	.9
Fruit-veg.	17.0	17.7	6.2	6.4	10.8	11.3
Other crops	8.1	8.4	7.0	7.1	1.1	1.2
Nursery	7.2	7.4	5.2	5.3	2.0	2.1
All crop farms	80.8	84.4	47.2	48.3	33.6	36.2
Red meat	52.0	54.0	45.0	45.6	7.0	8.5
Dairy	23.2	22.1	21.0	21.1	2.3	.9
Other livestock	4.1	4.3	3.6	3.7	.5	.6
All lvstk. farms	93.9	95.3	73.3	74.1	20.6	21.2

F = forecast.

Asset Growth and Debt Stability: Keywords for 1990

Rising asset and equity values continue to bolster U.S. agriculture's financial position in 1990. Higher farm real estate values account for most of the increase in asset values.

The value of farm assets (excluding operator household assets) could rise between 2 and 4 percent to between \$870 and \$880 billion by the end of 1990. The increase can be mainly attributed to rising real estate values, which are forecast to increase 3 to 4 percent. The expected increase reflects the higher returns from current income portrayed in the income statement.

Asset Values Rise for Fourth Consecutive Year

Asset values are projected to increase for the fourth straight year in 1990, following a 3.0-percent gain recorded in 1989. Real estate assets advanced 3.4 percent in 1989, rising in all farm production regions except the Southern Plains (figure 1 in Summary). Strongest gains were recorded in the Southeast (where values have risen for 4 consecutive years), Northern Plains, and Appalachia. Value increased a uniform 5 to 6 percent in the Pacific, Mountain, and Lake States regions. The Delta and Corn Belt regions increased only 1 and 2 percent, respectively. Adjustment for inflation reveals that the real value of farmland fell slightly during 1989.

Readers should note that the asset values discussed above and reflected in tables 7, 10, and 11 incorporate recent revisions to the farm real estate values made possible by information in the 1987 Census of Agriculture. The 1989 U.S. real estate value was revised upward more than 12 percent. Additional information concerning those revisions can be obtained from the March 1990 issue of Agricultural Outlook magazine and the forthcoming issue of Agricultural Land Values and Markets (June 1990).

During 1990, nonreal estate assets are expected to increase slightly from \$216.5 billion on December 31, 1989.

The value of crops is expected to be down slightly, while machinery and equipment and financial assets may increase slightly. Nonreal estate assets advanced about 1.5 percent during 1989.

Debt Levels To Stabilize

Preliminary indications are that total farm business debt declined 2 percent in 1989, marking the sixth consecutive year of debt reduction (tables 8 and 9). The bulk of the decline was in Farmers Home Administration (FmHA) loan balances, as the Agency was legally enabled to deal with its loan delinquency problems. Aggressive implementation of debt restructuring provisions of the Agricultural Credit Act of 1987 resulted in a nearly \$3-billion decrease in FmHA reported debt. Expectations that the improving agricultural economy would escalate new loan demand were only partially realized. Excluding the reduction in FmHA loan balances, the activity of all other lenders produced a slight net increase in total debt outstanding. The \$2-billion increase in commercial bank loans was offset by the \$2-billion reduction in other lenders' loan balances.

Demand for agricultural loans did not increase rapidly in 1989, as farmers remained cautious in their expansion activities. Another year of relatively high net cash income, coupled with delayed receipt of 1988 drought relief payments, provided farmers with adequate cash to meet their needs without requiring additional credit. The lack of increased borrowing suggests that both farmers and lenders retained a conservative attitude concerning the permanence of the farm sector's return to financial health.

Real Estate Debt Down, Nonreal Estate Up Slightly in 1990

Real estate debt declined 3 percent in 1989 and is forecast to be down another 2 percent at the end of 1990. Generally, the Farm Credit System's (FCS) real estate lending activity was not as aggressive as expected in 1989, while FCS nonreal estate loans increased more than anticipated. Commercial banks continue to increase market share in agricultural lending, and by the end of 1990 are projected to hold almost half of all nonreal estate loans and over 22 percent of farm real estate mortgages. The debt forecast for 1990 anticipates a writeoff of approximately half of FmHA's remaining seriously delinquent real estate loans. Several life insurance companies anticipate active participation in Farmer Mac and are expected to increase lending efforts.

Nonreal estate debt is expected to increase slightly in 1990, following decreases of less than 1 percent in 1988 and 1989. Again, pending FmHA reductions cloud the debt forecast picture. Outstanding debt reported by FmHA could be further reduced by success of the Agency's changing emphasis from programs issuing loans directly to farmers to those guaranteeing loans made by other lenders, principally commercial banks.

Equity Continues Rising

Farm business equity increased for the third consecutive year, gaining \$27 billion during 1989. The 3-percent increase in asset values, coupled with the 2-percent decline in debt, produced a net equity gain of 4 percent. Continuing increases in asset values and relatively stable debt are expected to increase equity 3 percent in 1990, a gain of nearly \$22 billion. The 3 years of gain followed 6 consecutive years of

loss. The recent gains recover only a fraction of the \$231-billion equity loss experienced between the 1980 peak and

the 1986 bottom. The changes in equity are largely in the form of unrealized capital gains and losses. The recent

gains reflect expectations of higher longer-term profitability of the farm sector.

Table 7--Balance sheet of the farming sector 1/

Year	Current dollars			Deflated dollars (\$1982) 2/		
	Assets	Liabilities	Equity	Assets	Liabilities	Equity
Billion dollars						
1980-84	951.7	184.4	767.3	977.6	188.1	789.5
1985-87	773.7	157.8	615.9	678.9	138.7	540.2
1988	828.1	138.4	689.7	682.4	114.1	568.6
1989F	853	136	717	675	107	568
1990F	870 to 880	132 to 138	735 to 745	660 to 670	98 to 108	560 to 570

F = forecast. 1/ Excludes operator households and CCC commodity loans. 2/ Deflated by the GNP implicit price deflator, 1982 = 100.

Table 8--Debt outstanding, excluding operator households, by lender, December 31

Lender	1983	1985	1987	1988	1989P	1990F
	Million dollars				Billion dollars	
Real estate	104,807	97,590	81,063	76,697	74	71 to 75
Federal Land Banks	45,026	41,105	30,144	28,024	26	25 to 28
Farmers Home Administration	8,718	9,540	9,249	8,821	8	5 to 8
Life insurance companies	11,834	11,035	9,231	8,923	9	8 to 10
Commercial banks	8,494	10,443	13,307	14,217	15	15 to 17
CCC storage facility	888	307	46	21	1/	1/
Individuals & others	29,847	25,160	19,086	16,690	16	14 to 16
Nonreal estate	87,888	77,524	62,012	61,734	61	60 to 64
Commercial banks	37,075	33,738	27,589	28,309	29	29 to 32
PCAs & FICBs	19,392	14,002	9,384	8,766	9	9 to 11
Farmers Home Administration	12,855	14,714	14,123	12,899	11	7 to 10
Individuals & others	18,566	15,070	10,916	11,760	12	12 to 13
Total debt (excluding CCC)	192,695	175,114	143,075	138,431	135	132 to 138

P = preliminary. F = forecast. 1/ Less than \$500 million.

Table 9--Percentage change in debt, excluding operator households, by lender, December 31

Lender	1983	1984	1985	1986	1987	1988	1989P	1983-89P	1990F
	Percent								
Real estate	2.2	-1.2	-5.8	-9.3	-8.5	-5.4	-3.1	-29.1	-2
Federal Land Banks	2.4	0.4	-9.1	-15.2	-13.5	-7.0	-6.0	-41.5	2
Farmers Home Administration	4.3	5.6	3.6	-.6	-2.5	-4.6	-9.2	-8.2	-20
Life insurance companies	-.5	-2.0	-4.8	-7.6	-9.5	-3.3	-1.0	-25.3	-1
Commercial banks	11.4	9.6	12.1	11.8	14.0	6.8	8.0	80.7	5
Individuals & others	1.1	-7.4	-9.0	-11.7	-14.1	-12.6	-5.6	-47.2	-6
Nonreal estate	1.0	-.9	-11.0	-14.1	-6.8	-.4	-.6	-30.2	0
Commercial banks	8.0	1.5	-10.3	-12.0	-7.0	2.6	3.3	-21.1	4
PCAs & FICBs	-5.7	-6.7	-22.6	-26.3	-9.0	-6.6	8.3	-51.1	6
Farmers Home Administration	-.9	6.9	7.1	-2.0	-2.1	-8.7	-15.9	-15.6	-23
Individuals & others	-3.0	-5.0	-14.6	-19.4	-10.1	7.7	.0	-36.7	8
Total debt	1.7	-1.0	-8.2	-11.4	-7.8	-3.2	-2.0	-29.6	-1
Farm Credit System	-.2	-1.7	-13.0	-18.0	-12.5	-6.9	-2.6	-44.4	3
Farmers Home Administration	1.1	6.4	5.7	-1.4	-2.2	-7.1	-13.2	-12.6	-22
Life insurance companies	-.5	-2.0	-4.8	-7.6	-9.5	-3.3	-1.0	-25.3	-1
Commercial banks	8.6	3.0	-5.9	-6.4	-1.1	4.0	4.9	-2.1	4
Individuals & others	-.5	-6.5	-11.1	-14.6	-12.7	-5.2	-3.3	-43.2	0

P = preliminary. F = forecast.

New Report Examines Farm Finances by Farm Credit District

Since the Farm Credit System principally supplies credit to farmers and ranchers, its financial health is following that of the overall agricultural sector.

A new report from Texas Tech University has examined farm financial characteristics by Farm Credit System (FCS) district.^{1/} The report is particularly interesting in that it shows that the financial health of the district banks has followed that of the farmers and ranchers in the districts.

Conditions Improving in Some Districts, Worsening in Others

The report analyzed USDA's Farm Costs and Returns Survey (FCRS) data for January 1, 1988, and January 1, 1989. The financial classifications are based on net cash household income. This measure, compared to the more common net farm income, considers loan principal repayment, family living expenses, and off-farm income, while excluding inventory changes and depreciation. These additional obligations and income are usually requested by lenders to determine the viability of farm debt. The data show that financial conditions improved in some FCS districts while deteriorating in others. The overall financial condition of all leveraged (indebted) U.S. farm operations remained stable, although the percentage in the favorable category (those with positive income and debt/asset ratio above .40) increased slightly.

The Springfield, Columbia, Wichita, and Spokane FCS districts showed improvement during 1988 with the percentage of leveraged farms with a favorable classification increasing. Also, the percentage in the vulnerable category (negative income and debt/asset ratio below .40) declined in each of these districts over the same period.

Farm financial conditions deteriorated in the Baltimore, Louisville, and St. Louis districts. The percentage of leveraged farms in the favorable category decreased in these districts while remaining constant in the St. Paul, Omaha, Texas/Jackson, and Sacramento districts. The Louisville district appears to have had the most severe deterioration. It experienced a decrease in the percentage of farms in the favorable category and an increase in the number of farms in the vulnerable category. St. Louis also experienced an increase in the percentage of leveraged farms in the vulnerable category. The percentage of farms in the vulnerable category either decreased or remained stable in the remaining districts.

The Springfield, Baltimore, Columbia, and Texas/Jackson FCS districts appeared to be in the strongest overall financial condition at the beginning of 1989. Each had more than 40 percent of the total leveraged farms in the favorable category while 15 percent or less were classified as vulnerable. The St. Paul and Omaha districts appeared in the weakest overall financial condition. Each of these districts had less than 35 percent of total leveraged farms falling into the favorable category while more than 25 percent of total leveraged farms were classified as vulnerable.

FCS Banks More Likely To Hold Vulnerable Debt

The FCS holds a large portion of the vulnerable debt in most districts. The data for 1989 indicate that FCS banks held more than 40 percent of the combined vulnerable debt in all districts and more than 50 percent in the Columbia, Louisville, St. Paul, and Sacramento districts. A majority of this debt is concentrated in the midwestern districts.

Approximately 50 percent of FCS' vulnerable operator debt is located in the St. Paul, Omaha, and Louisville districts.

Off-Farm Income May Explain FCS Position

Net cash household income incorporates differences in amounts of off-farm income received by different borrower groups. Differences in nonfarm income between borrower groups could explain why vulnerable farm operator debt is concentrated with FCS. The estimated average off-farm income for FCS borrowers was lower than the off-farm income for commercial bank borrowers for all districts in 1988 and 1989. There were also large differences in off-farm income between FCS districts. Borrowers of the Springfield, Omaha, and St. Paul FCS banks had average off-farm income of less than \$16,000 in both 1988 and 1989. This compares with borrowers of the Sacramento FCS bank whose average off-farm income was greater than \$32,000 in both years.

^{1/} Dodson, Charles B. *Financial Characteristics of Farm Households by FCS District and Lender Group*. Thornton Agr. Finance Inst. Bulletin 90.1, Texas Tech University, April 1990.

Conditions are improving in the Springfield, Columbia, Wichita, and Spokane districts but deteriorating in the Baltimore, Louisville, and St. Louis districts. The System itself is holding more of the vulnerable debt than commercial banks or other lenders.

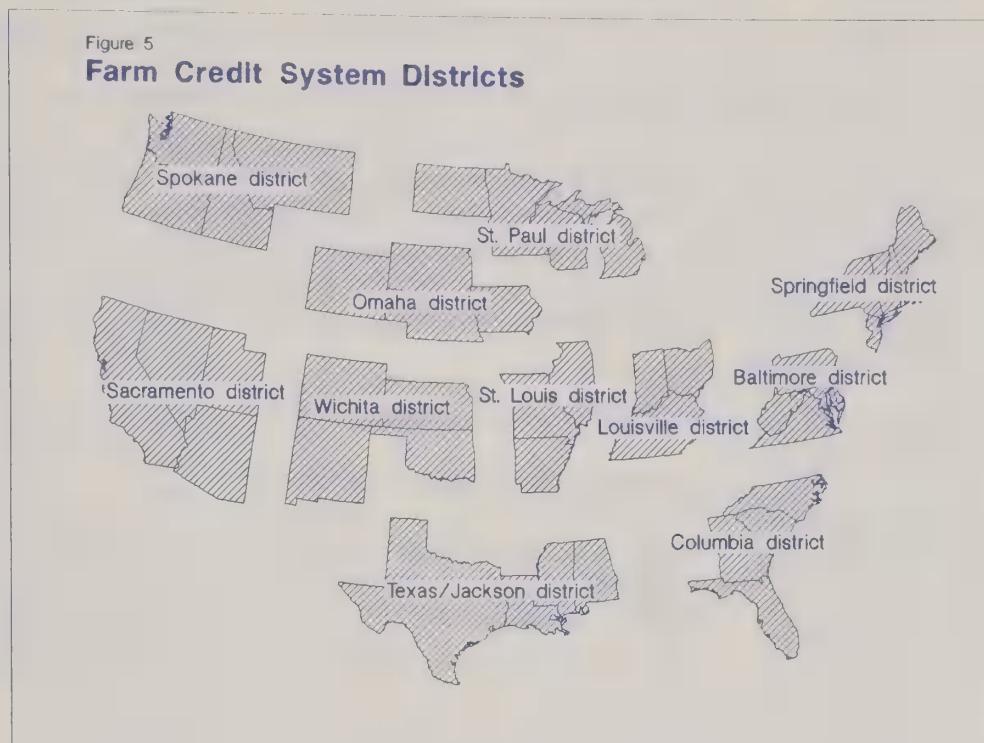


Table 10--Estimation of distribution of leveraged farm operations by FCS district and combined net household income and solvency position

FCS District and year	Income/solvency position				
	Favorable	Marital	Marital	Vulnerable	Vulnerable
	Percent				
Springfield					
1988	35.01	24.05	13.89	27.04	
1989	48.66	26.99	9.57	14.78	
Baltimore					
1988	45.90	26.67	15.49	11.93	
1989	41.96	25.63	21.14	11.27	
Columbia					
1988	45.64	20.85	20.52	12.99	
1989	50.51	20.72	20.65	8.11	
Louisville					
1988	40.41	23.61	19.41	16.57	
1989	35.18	26.58	15.05	23.19	
St. Louis					
1988	40.25	16.74	22.99	20.03	
1989	36.04	25.62	17.99	20.35	
St. Paul					
1988	28.87	16.16	27.01	27.96	
1989	27.49	17.66	26.87	27.98	
Omaha					
1988	34.44	14.97	31.58	19.01	
1989	33.56	18.85	18.12	29.47	
Wichita					
1988	30.89	17.39	24.94	26.77	
1989	40.28	21.09	18.81	19.82	
Texas/Jackson					
1988	43.44	22.89	20.76	12.91	
1989	45.14	28.02	11.72	15.12	
Sacramento					
1988	39.67	17.43	20.87	22.03	
1989	39.65	20.10	20.38	19.87	
Spokane					
1988	35.63	19.83	24.68	19.86	
1989	40.52	26.69	15.58	17.21	
U.S.					
1988	36.59	18.80	24.05	20.75	
1989	37.52	22.86	18.44	21.18	

Table 11--Estimated distribution of vulnerable farm operator debt by lender and FCS district

FCS District and year	FCS	Banks	Other lenders
Springfield			
1988	56.30	18.92	24.78
1989	43.97	42.81	13.22
Baltimore			
1988	48.82	31.73	19.45
1989	41.99	47.65	10.36
Columbia			
1988	63.30	22.93	13.77
1989	56.44	28.73	14.84
Louisville			
1988	55.11	32.76	12.13
1989	52.42	33.77	13.81
St. Louis			
1988	31.96	46.62	21.42
1989	49.69	36.91	13.39
St. Paul			
1988	52.24	24.59	23.17
1989	55.26	26.63	18.12
Omaha			
1988	46.86	28.38	24.76
1989	41.79	40.75	17.46
Wichita			
1988	34.78	48.44	16.78
1989	41.19	40.53	18.28
Texas/Jackson			
1988	62.37	28.02	9.60
1989	44.34	40.48	15.19
Sacramento			
1988	44.34	38.30	17.36
1989	52.24	24.40	23.36
Spokane			
1988	48.14	20.03	31.82
1989	48.67	27.96	23.37
U.S.			
1988	48.52	33.44	17.53
1989	48.55	33.91	17.23

Table 12--Estimated annual nonfarm income by lender group and FCS district weighted by lenders' distribution of farm operator debt

FCS District and year	FCS	Banks	Other lenders
Springfield			
1988	10,262	18,860	10,451
1989	15,666	34,969	21,229
Baltimore			
1988	20,580	25,653	18,866
1989	22,218	25,564	25,232
Columbia			
1988	21,366	22,709	19,901
1989	30,908	35,880	34,690
Louisville			
1988	22,581	25,453	22,478
1989	30,218	31,801	29,631
St. Louis			
1988	24,533	26,631	25,598
1989	16,551	20,761	19,216
St. Paul			
1988	12,509	14,466	13,594
1989	14,903	17,067	15,841
Omaha			
1988	15,821	14,786	14,851
1989	14,450	14,495	14,160
Wichita			
1988	20,106	20,040	18,734
1989	21,231	21,857	20,458
Texas/Jackson			
1988	34,453	38,872	33,966
1989	26,064	26,941	26,151
Sacramento			
1988	32,584	36,732	33,708
1989	38,207	45,236	38,534
Spokane			
1988	13,603	15,653	14,616
1989	19,587	28,186	24,311

Continued Improvement in Land Values Lowering Debt/Asset Ratio

Most of the general financial indicators are indicating continued improvement in the agricultural sector.

Financial ratios designed to measure liquidity, solvency, profitability, and financial efficiency suggest continued strength in the farm sector's financial position. However, the financial picture is less clear when 1989 is compared with 1988. Both solvency ratios (debt/asset and debt/equity) declined from 1988, and are expected to fall further in 1990. The liquidity and financial leverage ratios gave mixed results. Profitability ratios that exclude returns from real capital gains rose in 1989, but those that include real capital gains fell. Profitability ratios are expected to remain stable in 1990.

Debt/asset ratios improved for the fourth consecutive year during 1989. Higher land values and lower real estate debt reduced the real estate debt/asset ratio to 11.7 percent from the 1985 peak of 16.3 percent. With land values projected to increase 3 to 4 percent in 1990 and debt expected to be down slightly, this ratio is forecast to decline to nearly 11 percent by the end of 1990. Generally, improved cattle and crop prices are expected to be offset by lower yearend inventories, and should result in slightly

lower inventory values. Stable nonreal estate values in 1990 combined with virtually unchanged debt levels to produce a nonreal estate debt/asset ratio of 28 percent, continuing this ratio's decline from its 1983 peak of 45 percent.

Farm Sector Returns Rise

Changes in farm asset values, returns, and cash flow continue to yield high returns to farm assets and equity and to improve farmers' debt service ability, especially relative to the early 1980's. As returns to farm assets and to farm

equity rose faster than farm asset and equity values, the rates of return from current income on farm assets and on farm equity rose from 4.1 percent and 2.7 percent in 1988 to 4.3 and 3.1 percent, respectively. Both are expected to remain stable in 1990 (4 to 5 and 3 to 4 percent, respectively). The total real rate of return on farm assets, including returns from current income and real capital gains, is expected to fall from 10.0 percent in 1988 to 6.5 percent in 1989, and 4 to 5 percent in 1990 (table 13).

The total real rates of return measures of profitability and the "spread" include the real capital gains component of total returns. The spread equals the total real return on assets minus the real cost of debt. It fell from 4.1 percent in 1987 to 3.4 percent in 1988. The spread is expected to be 0.5 percent in 1989 and -1 to -2 percent in 1990. This suggests that debt financing was becoming somewhat less profitable for the farm sector as a whole in 1989 and 1990 than in 1988. However, debt financing is still considerably more profitable than it was in the mid-1980's, when the spread ranged from about -8 to -14 percent.

Cash Flow

Cash flow after interest (\$1982) was \$37.9 billion in 1989 and is expected to be about \$5 to \$7 billion lower in 1990, compared with the 1984-87 average of \$30 billion. The fall in real cash flow after interest since 1988 reflects lower real gross cash income and increased net loan repayments. The debt/net cash flow ratio rose from 2.7 in 1988 to 2.8 in 1989, and may rise to over 3 in 1990.

Table 13--Rates of return on farm assets and equity 1/

Year	Returns to assets			Returns to equity		
	Income	Real capital gains	Total	Income	Real capital gains	Total
1982-84	1.8	-4.2	-2.4	-0.4	-4.2	-4.7
1985-87	4.1	-3.7	.3	2.5	-3.9	-1.4
1988	4.1	5.9	10.0	2.7	8.0	10.7
1989F	4.3	2.2	6.5	3.1	3.5	6.6
1990F	4 to 5	0 to 1	4 to 5	3 to 4	1 to 2	4 to 5

F = forecast. 1/ Excludes operator households. Totals may not add due to rounding. Returns to assets and equity are calculated using the average of the current and previous years' assets and equity, respectively.

Table 14--Returns to assets and equity

Income and Returns	:	1986	1987	1988	1989F	1990F
Billion 1982 dollars						
Gross farm income		141	146	146	151	145 to 149
Returns to operators		30	37	32	36	33 to 37
Residual income to farm assets		27	32	27	29	26 to 30
Residual income to equity		13	20	15	17	15 to 19

F = forecast.

Figure 6
Profitability Ratios

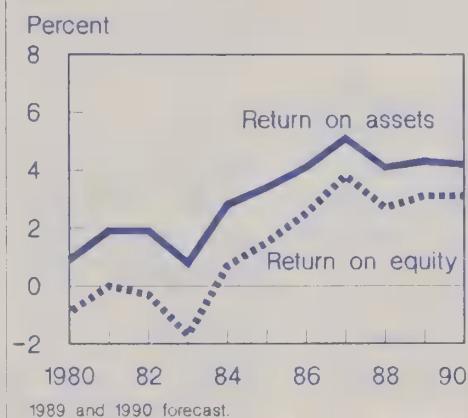


Figure 7
Rate of Return on Assets and Cost of Debt

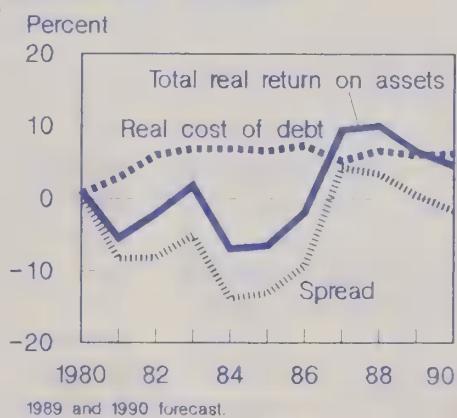


Figure 8
Farm Debt Compared with Income Flows to Farm Assets

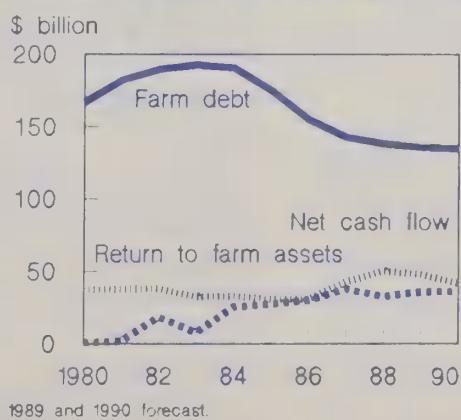
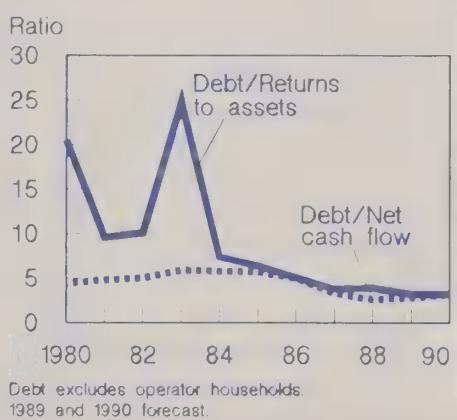


Figure 9
Farm Debt Ratios



Outlook Remains Good for Continued Growth with Moderate Inflation

A likely temporary first-quarter inflation surge keeps interest rates high.

Interest rates for short-term instruments were relatively flat during the first 4 months of 1990. The Federal funds rate (the rate at which banks lend reserves to other banks), which had fallen 60 basis points during the fourth quarter of 1989, fluctuated only 2 points around its January-April average of 8.25. During the same period, the 3-month Treasury bill yield rose 14 basis points to 7.78 and the 10-year Treasury bill rate rose just under 60 basis points to 8.79. A high long-term Treasury bill yield suggests a possible rise in long-term expected inflation.

An increase in long-term expected inflation was associated with a price surge in the first quarter. Consumer prices rose an annualized 8.5 percent for all items. Excluding food and energy, they rose 7.5 percent. The relatively high "underlying" inflation for 1990 can be attributed to two events: the passthrough of high fuel prices to the transportation sector in January, and an early introduction of the spring fashion

line in February and March. Producer price inflation rose in the first quarter, 6.7 percent annually for total finished goods and 3.2 percent for finished goods less food and energy. The moderate price increases for items less food and energy were spread among the apparel, tobacco products, mobile homes, alcoholic beverages, and jewelry sectors.

The early 1990 acceleration in inflation follows a price slowdown in the second half of 1989, which was expected by many analysts to continue into 1990. The Federal Reserve eased monetary policy in the second half while producer prices for finished goods grew by 1.9 percent. In contrast, producer price inflation was 8 percent during the first half of 1989.

Interest rate declines in the second half of 1989 helped push real GNP growth above 2 percent in the first quarter of 1990. Rebounds in durable consumption, residential, and nonresidential

investment led the growth. Automobile manufacturers' incentive programs helped generate about an annualized 17-percent increase in consumer durable expenditures, a turnaround from the 14-percent drop in the fourth quarter. Producers' durable equipment led an almost 8-percent rise in nonresidential investment. Residential investment showed renewed growth after four quarters of decline.

Personal income continues to grow, but more slowly. First-quarter growth for real disposable income was around 1.8 percent, annualized, slightly slower than the 4 percent for all of 1989.

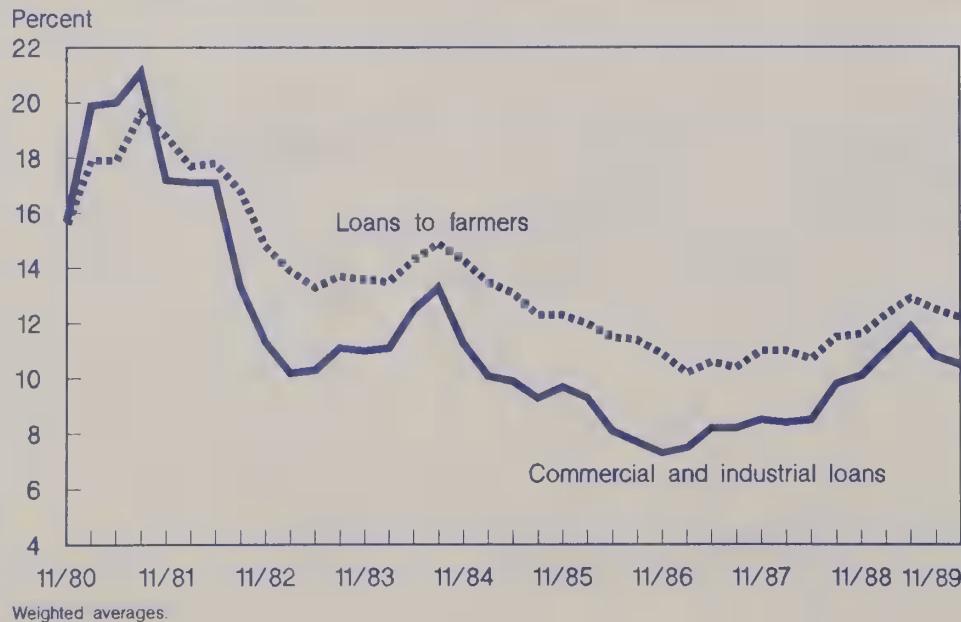
Outlook

With the economy growing, and inflation rates high, it may take time before interest rates fall substantially. Inflation should be tapering off, as most of the early 1990 price shocks appear to be temporary. As inflation pressure eases, interest rates should slide somewhat. Overall real growth should average about 2.5 to 3 percent for the year.

Farmer vs. Commercial Loan Rates

Average bank loan rates to farmers have followed the same movements as the Federal funds rate. The Terms of Lending survey shows that after peaking at 12.86 percent in the second quarter of 1989, farm interest rates fell to 12.16 by the end of the year. These averages were computed from information provided by banks surveyed by the Federal Reserve, with about a 3-month lag in reporting time. Throughout the 1980's, the farm interest rate has been generally higher than the commercial and industrial loan interest rate. Rates on loans to farmers do not appear to have fallen or risen as quickly as rates for commercial and industrial loans.

Figure 10
Bank Lending Rates: Commercial vs. Farm



Financial Recordkeeping by U.S. Farmers and Ranchers

by

James Johnson, David Banker, and Mitchell Morehart^{1/}

Abstract: *Data quality can be improved when survey respondents use their financial records to provide information. On the 1986 Farm Costs and Returns Survey, 70 percent of surveyed farm and ranch operators used some sort of financial records to answer questions. In 1987, some 77 percent of survey respondents said they kept formal records or used a recordkeeping service, versus 23 percent who kept no records.*

Keywords: *Financial records, farm management, Farm Costs and Returns Survey.*

Since 1984, the Economic Research Service (ERS) has been building a comprehensive farm financial management information system. The analytical focus has been on the development of reliable indicators of financial performance for farm operators. Of importance to ERS, as well as the agricultural finance community, has been the issue of data quality and the ability to obtain accurate financial data, often perceived as sensitive, from personally enumerated surveys.

One factor potentially affecting data quality is whether respondents use their records to answer financial questions on surveys. To measure this, enumerators for the 1986 Farm Costs and Returns Survey (FCRS) were asked to indicate whether a respondent used records. Enumerators recorded yes if respondents used farm management records, their 1040F tax form, or other records when responding to expenditure or financial questions. If the respondent supplied responses from memory, without referring to records, the enumerator coded the question no. Subjective evaluation of record use indirectly provided insight into the availability of farm and ranch records.

A second factor is efficiency in data collection, given that the average FCRS interview exceeds one hour. Thus, determining the types of records that producers have available could allow questionnaires to be geared to available record systems and, therefore, data. To measure the records that farmers and ranchers maintain, ERS asked respondents on the 1987 FCRS whether their farm operation used or subscribed to a service (extension, farm business association, accountant, farm management/information business, producer organization, or other source) for keeping farm or ranch financial records.

Aside from the service used, if any, operators also were asked which method (general ledger, farm records workbook, home/personal computer, or another method) was used to keep track of the operation's income and expenses. The juxtaposition of the two inquiries provided insight not only into the direct use of farm and hired consultant services in maintaining records, but also farmers' use of records in responding to sensitive farm finance questions.

A third issue of interest, not only to USDA but to agricultural lenders and others, is how producers view the importance of keeping records suitable for cost-of-production and financial

analysis. On the 1988 FCRS, producers were asked to rank the importance of keeping these records (from 1 to 5 with 1 being least important) along with other production and sociologically oriented items.

Use of Farm Records

On the 1986 FCRS, survey enumerators were instructed to record whether farmers used records to respond to financial questions. No attempt was made to distinguish between formal and informal record systems. Enumerators' responses indicate that at least 70 percent of all farm operators used some form of records (table A-1). These operators accounted for over 80 percent of all commodity sales, 81 percent of all operator business debt, and about 74 percent of all operator farm business assets on farms represented by the survey.

As might be expected, record use varied substantially by farm size, production specialty, and location. For example, when measured by economic class, which includes both commodity sales and direct Government payments, over 80 percent of farms earning \$250,000 or more used records. In contrast, only 62 percent of farms earning \$39,999 or less used records. On a net-farm-income basis, over 70 percent of the larger farms

^{1/} Agricultural economists, Agriculture and Rural Economy Division, ERS.

Table A-1--Record use in answering the 1986 FCRS

Operation characteristic	Percent of survey respondents
All farms and ranches	69.3
Economic class:	
\$250,000 or more	80.6
\$40,000 to \$249,999	83.1
\$39,999 or less	61.6
Net farm income:	
\$100,000 or more	73.0
\$40,000 to \$99,999	79.7
\$10,000 to \$39,999	77.0
\$9999 to \$1	61.9
\$0 to -\$9,999	64.7
Less than -\$9,999	74.8
Production specialty:	
Cash grain	79.9
Tobacco, cotton	59.6
Vegetable, fruit, nut	69.5
Nursery, greenhouse	48.9
Other crop	56.7
Beef, hog, sheep	65.5
Dairy	80.0
Poultry	56.7
Other livestock	58.1
Region:	
Northeast	72.6
Lake States	78.8
Corn Belt	79.7
Northern Plains	80.0
Appalachia	50.3
Southeast	42.7
Delta	56.5
Southern Plains	59.1
Mountain	73.5
Pacific	71.1
Operator's age:	
34 or under	70.5
35 to 44	70.3
45 to 54	69.9
55 to 64	70.7
65 or over	64.4
Debt owed to lender:	
Commercial banks	78.4
Federal land banks	82.5
Production Credit Associations	82.2
Farmers Home Administration	78.6

(earning or losing \$10,000 or more) used records.

Farms specializing in cash grains and dairy products were the most intensive record users. Farms in the other livestock, other crop, and poultry categories were least likely to use records. At the regional level, farms located in the Lake States, Corn Belt, and the Northern Plains were the heaviest record users. Conversely, record use was lowest in the southern regions (Appalachia, Southeast, Delta, and Southern Plains).

The analysis of these 1986 results in combination with 1988 FCRS cross tabulations of farm numbers by economic class, region, and production specialty,

suggests that farm size was a key determinant of record use, followed by production specialty and region. For example, the three regions where record use was most intensive also had the highest shares of farms with sales of \$40,000 or more. Similarly, the highest shares of farms receiving less than \$40,000 were located in the South (Appalachia, Southeast, Delta, and Southern Plains). Most dairy farms were located in the Northeast, the Lake States, the Corn Belt, and the Northern Plains and nearly three-fourths of these farms had sales of \$40,000 or more.

In contrast, over 75 percent of farms categorized as other crop and other livestock had sales of less than \$40,000 with nearly half of other livestock farms being located in the South. For cash grain and poultry farms, the shares with sales above and below \$40,000 were almost evenly divided. However, over 70 percent of all cash grain farms were located in the Lake States, Corn Belt, and the Northern Plains, while about 80 percent of all poultry farms were located in the South.

Sole proprietorships were somewhat less likely to use records than partnerships or corporations, as were operators over 65 years old. Farms using records operated more acreage on average but also rented a higher proportion of total acreage operated. They also had substantially higher average levels of net cash farm income, net farm income, debt, and assets. Non-farm income, however, was higher on operations where records were not used.

Recordkeeping Services

On the 1987 FCRS, farmers were asked to identify their method of keeping records and the type of recordkeeping service used, if any. Enumerators were not required to indicate whether farmers used their records to respond to survey questions. In comparison to 1986, a higher share reported keeping formal records and/or using a service. For example, in 1986 nearly 57 percent of poultry producers used records in answering the FCRS, whereas in 1987

nearly 83 percent of these producers reported using a service and/or keeping records (table A-2). Many of the relationships noted in 1986 also applied in 1987 when data on farmers who used records for the 1986 FCRS were compared to 1987 data on farmers who reported using a service and/or keeping records.

Operators Using a Service and/or Keeping Records

In 1987 about 77 percent of all operators reported using a service and/or keeping their own formal records. These operators accounted for nearly 94 percent of total crop and livestock sales, held 86 percent of total assets, and owed 91 percent of all debt on farms represented by the survey. As in 1986, a substantially higher share of these operators was in an economic class of \$40,000 or more and earned or lost \$10,000 or more in net farm income. The largest users of records/services were cash grain, dairy, and cotton farms (not classified separately in 1986). The lowest use occurred on tobacco (not classified separately in 1986), beef/hog/sheep, other livestock, vegetable, fruit and nut, and other crop farms.

As in 1986, the highest uses were in the Lake States, the Corn Belt, and the Northern Plains. Records were used least intensively in the southern regions. Nearly 84 percent of operators under the age of 35 used records and/or a service, compared to 69 percent of operators aged 65 or over. Record/service users were more highly leveraged (debt/asset ratio of .16) than non-users (debt/asset ratio of .10), but had a lower debt burden as shown by the interest/gross cash income ratio. Record/service users also had a much higher rate of return on equity (3.24 percent) than non-users (.82 percent).

Operators Using Only a Service

Just 2 percent of all operators reported using only a recordkeeping service in 1987. These operators accounted for 4 percent of all crop and livestock sales and held about 4 percent of all operator debt and assets.

Operators Using Both a Service and Their Own Records

Over 9 percent of all operators reported using both a recordkeeping service and their own formal recordkeeping system in 1987. The data indicate that these were predominantly larger farm operations. For example, about 65 percent were in an economic class of \$40,000 or more. They also had a disproportionately higher share of sales (28 percent of total), debt (25 percent), and assets (18 percent). By production specialty, the largest users of both a service and their own record system were nursery and greenhouse, dairy, and cotton producers. By location, the greatest use of a service and records occurred in

the Lake States, the Mountain, and the Northeast regions.

Based on distributional data from the 1988 FCRS, the largest share of dairy farms is located in the Lake States. Over 50 percent of the farms in the Mountain region specialized in beef, hog, and sheep production in 1988. Over 30 percent of the operators who used a service and records were beef, hog, and sheep producers. The Northeast contained the highest share of nursery and greenhouse operations and the second highest share of dairy operations. The largest share of cotton farms was located in the Southern Plains, but these farms comprised only about 5 per-

cent of all farms in that region. As a group, operators using both records and a service were the most highly leveraged with a debt/asset ratio of .21 and had the highest rate of return on equity (5.81 percent).

Operators Using Only a Formal Recordkeeping Method

Operators who used only a formal method of keeping records in 1987 were predominantly mid-sized or smaller. In 1987 they accounted for 65 percent of all farms, 61 percent of total crop and livestock sales, 62 percent of operator debt, and 64 percent of operator assets. By region, the most intensive use of records occurred in the Corn Belt, the

Table A-2--Type of records and/or recordkeeping service used by FCRS respondents, 1987 FCRS

Operation characteristic	Kept formal records and/or used a service	Did not keep formal records or use a service	Used a service and formal records	Used a service only	Kept formal records only
Percent					
All farms	76.7	23.3	9.4	2.0	65.3
Economic class:					
\$250,000 or more	96.6	3.4	33.2	6.9	56.5
\$40,000 to \$249,999	93.3	6.7	15.9	2.0	75.3
\$39,999 or less	68.3	31.7	4.9	1.6	61.9
Net farm income:					
\$100,000 or more	95.1	4.9	27.8	5.4	61.9
\$40,000 to \$99,999	91.7	8.3	17.9	3.1	70.7
\$10,000 to \$39,999	81.2	18.8	9.2	1.9	70.1
\$9999 to \$1	66.2	33.8	4.1	.9	61.2
\$0 to -\$9,999	72.8	27.2	7.7	1.3	63.8
Less than -\$9,999	89.6	10.4	17.6	5.1	66.8
Production specialty:					
Cash grain	88.8	11.2	10.8	1.0	77.1
Tobacco	42.9	57.1	d	d	41.9
Cotton	87.4	12.6	d	d	69.1
Other field crops	77.0	23.0	d	d	67.1
Vegetable, fruit, nut	76.8	23.2	d	d	59.6
Nursery, greenhouse	83.1	16.9	d	d	57.6
Beef, hog, sheep	70.7	29.3	6.9	1.4	62.4
Poultry	82.6	17.4	d	d	69.0
Dairy	88.2	11.8	16.8	4.1	67.4
Other livestock	76.3	23.7	d	d	60.3
Region:					
Northeast	80.7	19.3	11.3	3.8	65.6
Lake States	84.4	15.6	12.9	1.8	69.7
Corn Belt	88.0	12.0	10.5	.9	76.6
Northern Plains	88.2	11.8	11.2	.4	76.6
Appalachia	60.0	40.0	3.3	1.3	55.3
Southeast	71.8	28.2	10.3	1.1	60.4
Delta	59.7	40.3	10.8	3.5	45.4
Southern Plains	63.2	36.8	5.3	1.2	56.7
Mountain	83.6	16.4	11.7	3.7	68.2
Pacific	75.4	24.6	10.3	5.9	59.2
Operator's age:					
34 or under	83.9	16.1	10.3	3.1	70.6
35 to 44	81.3	18.7	12.2	1.9	67.2
45 to 54	77.8	22.2	12.2	1.6	64.0
55 to 64	75.3	24.7	8.5	3.0	63.8
65 or over	69.2	30.8	4.5	.9	63.8
Debt owed to major lender:					
Commercial banks	87.7	12.3	22.0	4.6	61.1
Federal land banks	92.8	7.2	29.0	3.1	60.7
Production Credit Associations	95.7	4.3	33.6	4.1	58.1
Farmers Home Administration	91.9	8.1	21.4	4.5	65.9

d = Insufficient data for disclosure.

Table A-3--1988 FCRS respondents' ranking of the importance of keeping records for financial analysis

Operation characteristic	Importance of keeping records				
	1 = least	2	3	4	5 = most
All farms	24.4	8.8	18.0	15.0	33.8
Economic class:				Percent	
\$250,000 or more	3.2	2.4	22.7	26.4	45.3
\$40,000 to \$249,999	12.3	8.5	20.3	19.4	39.5
\$39,999 or less	31.0	9.6	16.7	12.1	30.5
Net farm income:					
\$100,000 or more	3.4	d	d	29.3	47.7
\$40,000 to \$99,999	9.6	d	d	22.8	38.2
\$10,000 to \$39,999	19.1	9.3	21.1	18.1	32.4
\$1 to \$9999	34.3	9.8	18.5	11.7	25.8
\$0 to -\$9,999	31.1	9.0	12.4	8.7	39.0
Less than -\$9,999	10.5	4.3	18.8	17.6	48.9
Production specialty:					
Cash grain	13.7	6.5	21.3	19.8	38.6
Tobacco	40.5	d	21.4	d	23.3
Cotton	d	d	d	24.7	55.0
Other field crops	21.4	7.8	17.7	17.8	35.3
Vegetable, fruit, nut	21.5	d	21.3	d	36.4
Nursery, greenhouse	29.1	d	19.1	d	39.3
Beef, hog, sheep	29.0	10.1	15.4	13.5	32.0
Poultry	d	d	d	d	26.0
Dairy	14.5	8.9	29.0	15.3	32.3
Other livestock	d	d	d	d	40.6
Region:					
Northeast	24.5	13.7	15.8	17.3	28.8
Lake States	14.8	d	d	20.4	36.2
Corn Belt	20.3	8.5	16.3	13.1	41.9
Northern Plains	9.3	d	d	28.0	44.3
Appalachia	27.1	9.6	19.4	11.4	32.5
Southeast	31.8	12.0	13.1	14.7	28.4
Delta	36.3	12.3	24.9	4.9	21.5
Southern Plains	39.8	11.0	15.1	12.4	21.7
Mountain	15.4	4.8	22.5	17.6	39.6
Pacific	19.9	6.6	19.7	13.9	39.9
Operator's age:					
34 or under	8.6	9.4	16.5	20.4	45.0
35 to 44	17.4	9.4	21.2	13.5	38.5
45 to 54	20.3	9.5	17.7	18.9	33.6
55 to 64	31.1	8.0	15.5	11.4	34.1
65 or over	34.7	8.1	19.3	13.4	24.6
Debt owed to major lender:					
Commercial banks	10.7	7.8	19.9	24.0	37.7
Federal land banks	8.3	3.8	24.2	16.4	47.1
Production Credit Associations	10.0	4.4	16.3	14.1	55.3
Farmers Home Administration	6.2	4.6	19.2	11.7	58.3

d = Insufficient data for disclosure.

Northern Plains, and the Lake States. Records were least likely to be used in the southern regions. Cash grain, cotton, poultry, and dairy producers were the heaviest users of records by production specialty.

Importance of Keeping Records

On the 1988 FCRS, farm operators were asked to rate the importance of "keeping records suitable for cost-of-production and financial analysis" on a scale of 1 to 5 with 1 being the least and 5 being the most important. Over 24 percent of all operators rated keeping good records for these purposes as least important.

These operators accounted for nearly 8 percent of all crop and livestock sales, 10 percent of all debt, and 14 percent of all assets.

At the other extreme, the 34 percent of operators who rated recordkeeping as most important for analysis accounted for nearly 42 percent of all crop and livestock sales, 46 percent of all operator debt, and 40 percent of all operator assets. Operators on farms producing poultry and tobacco considered records least important. Cotton producers, followed by other livestock, nursery and greenhouse, and cash grain producers, rated recordkeeping as most important.

On a geographical basis, operators in the South attached the lowest importance to maintaining useful records. Operators in the Northern Plains, Corn Belt, Pacific, Mountain, and Lake States regions rated recordkeeping as most important. As might be expected, as operator age increased, the share of operators ranking good records as least important increased. Conversely, the share of operators who considered recordkeeping as most important decreased as operator age increased.

Summary and Implications for Further Analysis

Responses to the 1986 and 1987 Farm Costs and Returns Survey extended information about farm and ranch recordkeeping activities from a local to a national perspective. Previous studies suggested that about three-fourths of producers were keeping records. Survey returns indicated that this share applies nationally as well. Key observations to be drawn from this report include:

- A prime interest of USDA is the extent to which producers use their records in responding to questions about expenses and financing of the farm business, especially because these data are used in deriving estimates of net farm income and financial performance. Survey data indicated that more farmers have records than enumerators said used them. This was particularly true for larger farm operations and for certain farm types such as nursery and greenhouse, poultry, and general crop and livestock farms.
- Enumerators reported that 7 of 10 producers used records in responding to sensitive financial inquiries. For larger operations that account for 80 percent of agricultural sales and the majority of debt, more than 8 of 10 producers used records in responding to survey questions.
- For interview purposes, enumerator training has been structured to stress the use of farm records, indicating that less of the respondents' time may be taken and better data acquired if records are used. Work

has also been done to structure questionnaires to more closely resemble the format of farm record books.

- A second objective of USDA analysis of recordkeeping practices was to quantify the extent of recordkeeping. Results showed that more than 75 percent of all farmers and 90 percent of farmers with sales over \$40,000 either kept formal records or used some type of service to organize their financial data. The extent of recordkeeping varied by economic size, age of operator, tenure, degree of indebtedness, production specialty, and location.
- Results of ranking farmers' attitudes toward recordkeeping indicated that

farmers with larger gross incomes, higher net incomes, and larger debts and assets tended to rank recordkeeping as being more important. Younger operators and farmers who rented more of their land also tended to rank recordkeeping more highly. In addition, farmers located in areas that have traditionally focused on recordkeeping activities, such as the Corn Belt and Northern Plains, attached a higher level of importance to recordkeeping.

To date, ERS' work has focused on measuring recordkeeping activities and how knowledge of these activities can improve data collection. A corollary

activity is to measure how farmers are using their record systems. The use of records for management represents a large component of USDA's ongoing farm financial analyses program. The 1989 FCRS will collect information about whether records are being kept, the types of financial, enterprise, employee, and family expense statements that farmers prepare from their record systems, the type of accounting method used, and the types of decisions made using financial statements. This information will provide more insight into the financial performance of farm businesses as it relates to the types and uses of farm records.

Do Efficient Producers Use More Chemicals?

by

William D. McBride and Hisham El-Osta^{1/}

Abstract: According to analysis of USDA's Farm Costs and Returns Survey, chemical expenditures by low-cost producers were less than those of other producers. The most cost efficient cotton producers, however, had chemical expenses much higher than all other cotton producers. Programs designed to improve the efficiency of chemical use on major field crops could generate environmental benefits without drastic effects on production and market price. Achieving environmental benefits without serious implications for the cotton industry, however, could be more difficult.

Keywords: Efficiency, chemicals, Farm Costs and Returns Survey

Environmental and health concerns have created a growing interest in low-input or alternative agriculture. Farmers, however, are unsure whether they could remain in business without the availability of synthetic chemical fertilizers and pesticides.

Whether agriculture's dependence on synthetic chemicals can be reduced without serious effects on the industry is likely to be a much debated topic in the future. Can farm commodities be produced efficiently with reduced reliance on chemical inputs? What crops would be most affected? What are the implications for national production and market prices?

Background

The Farm Costs and Returns Survey (FCRS) was used to examine farm fertilizer and pesticide expenditures on six major field crops. Special commodity versions of the FCRS provided the data source; with corn and cotton surveyed in 1987; sorghum, soybeans and wheat in 1986; and rice in 1984. Consequently, the analysis of each crop was limited to its survey year. Fertilizer application rates were obtained from the FCRS, while prices were reported by

the National Agricultural Statistics Service. Pesticide costs were summarized directly from the FCRS.

Farm fertilizer and pesticide expenditures were compared for farms with the lowest total economic production costs to those with higher costs. Total economic costs were converted to a per-unit of output basis and ordered from lowest to highest. The 25 percent of farms with lowest per-unit costs were chosen as the low-cost group and, in this report, are synonymous with the most cost efficient producers. Cost efficiency, therefore, refers to how total economic costs were expended to produce a unit of output. Total economic costs represent costs that must be paid in the longrun to retain resources in production. Included were variable and fixed cash expenses (less interest costs) and opportunity costs of owned inputs.

Fertilizer and Pesticide Expenditures

Costs of nitrogen, phosphorus, potassium, lime, gypsum, and secondary nutrients and micronutrients comprised farm fertilizer expenditures. Low-cost farms generally had much lower expenditures on fertilizers than other farms (table B-1). Cotton was the exception. Among the highly-fertilized crops of corn and rice, low-cost growers had

about a \$10 per acre lower fertilizer expense. Less-fertilized crops, including sorghum, soybeans, and wheat, had differences of around \$2 to \$4 per acre. Low-cost cotton producers had nearly twice the fertilizer expenditures of all other cotton producers.

Pesticide expenditures included costs of herbicides, insecticides, fungicides, nematicides, defoliants, fumigants, and growth regulators used on each crop. As with fertilizers, expenditures on pesticides were generally lower by the low-cost producers. Pesticide expenditures on corn, rice, sorghum, and soybeans ranged from about \$2 to nearly \$5 per acre lower among the low-cost growers. For wheat, expenditures on pesticides were nearly identical for the cost groups. Low-cost cotton producers, however, had greater pesticide expenses than all other cotton producers. Cotton pesticide expenditures among the low-cost growers, like those of fertilizer, were nearly double those of other producers.

Variations in chemical expenditures among producers include both use and cost differences. Large crop producers may take advantage of bulk discounts in purchasing chemicals, thus lowering per-acre chemical expenditures. Consequently, the comparison of chemical

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Table B-1--Fertilizer and pesticide expenses of U.S. crop producers by economic cost level

Commodity	Fertilizer		Pesticides	
	Low-cost producers	All other producers	Low-cost producers	All other producers
Dollars per acre				
Corn	32.02	41.75	18.75	20.61
Soybeans	3.59	6.50	10.81	12.68
Wheat	11.52	15.19	3.97	3.39
Sorghum	15.35	17.93	8.39	11.68
Rice	28.99	39.94	1.43	6.16
Cotton	31.57	18.18	68.31	36.72

Source: Analysis of Farm Costs and Returns Survey Data.

expenditures between low-cost and all other producers indicates only potential differences in chemical use. Larger variations among groups in chemical expenditures, however, would be more likely attributed to greater differences in chemical use.

Yields

Yields of the low-cost producers for five crops were higher than for other producers despite lower fertilizer and pesticide expenditures (table B-2). Low-cost growers had yields that were at least 30 percent higher for all crops—except rice. Cotton yields, however, were directly related to fertilizer and pesticide expenditures. Low-cost cotton producers had nearly double the yields, as well as fertilizer and pesticide expenses, of all other cotton producers.

Acreage and Production

The 25 percent of farms comprising the low-cost group for each crop had a disproportionately large share of aggregate acreage and production (table B-3). The portion of acreage farmed by the most cost efficient producers ranged from 27 percent for rice to 38 percent for wheat. An even greater proportion of farm production was generated by the efficient producers. For most crops, 35 percent or more of farm production was attributed to the low-cost growers. The 25 percent of cotton farms with the lowest per-unit costs produced 50 percent of total cotton production, highest among all crops.

Table B-2--Per-acre yields of U.S. crop producers by economic cost level

Commodity	Low-cost producers	All other producers
Corn	136 bu.	104 bu.
Soybeans	43 bu.	30 bu.
Wheat	42 bu.	24 bu.
Sorghum	89 bu.	58 bu.
Rice	55 cwt.	51 cwt.
Cotton	982 lbs.	457 lbs.

Source: Analysis of Farm Costs and Returns Survey Data.

Table B-3--Percent of U.S. crop acreage and production by economic cost level

Commodity	Acreage		Production	
	Low-cost producers	All other producers	Low-cost producers	All other producers
Percent				
Corn	30	70	35	65
Soybeans	30	70	38	62
Wheat	38	62	48	52
Sorghum	33	67	44	56
Rice	27	73	29	71
Cotton	32	68	50	50

Source: Analysis of Farm Costs and Returns Survey Data.

Conclusions

This analysis shows that cost efficient crop producers are not necessarily the heaviest users of synthetic chemical fertilizers and pesticides. In each of five crops examined, the most efficient producers spent less on chemicals than all other producers. Yields of each crop did not suffer with the reduced chemical expenditures. These findings suggest that corn, soybeans, sorghum, wheat, and rice may be produced cost efficiently with more efficient use of chemical inputs.

In contrast, chemical expenditures were highest for the most cost efficient cotton producers. Yields also were highest for the efficient cotton producers. Much of the U.S. cotton crop is produced in areas where weed and insect pressures are typically high. Herbicides and pesticides are essential to insure a good crop. Other chemicals, including growth regulators and defoliants, are often used to improve cotton yields. Consequently,

cost efficient cotton production depends on relatively heavy use of chemical inputs.

Based on the findings of this report, cost efficient producers of corn, soybeans, sorghum, wheat, and rice do not have higher chemical expenses than other producers. With a disproportionate share of crop acreage and production among efficient producers, programs designed to improve the efficiency of chemical use could generate environmental benefits with limited impacts on production and market price. Cost efficient producers of cotton, however, are more dependent on chemical inputs. Since the most efficient cotton growers generate half of U.S. production, programs to promote efficiency in chemical use would likely affect the cotton industry more than other crop industries. Reduced cotton supplies and higher prices could result.

The Role of the Farm Household in the Agricultural Economy

by
Mary Ahearn^{1/}

Abstract: Traditional farm income accounting has never separately examined the farm operator's household apart from the overall level of farm income. This has been because of data inadequacies. Newly available 1988 data show the average U.S. farm supported 1.11 households, not including landlords and contractors. These households earned an average income of \$33,535, compared with \$34,017 for all U.S. households. This report analyzes new data to identify and describe the role of farm operator households in terms of both farm and nonfarm income.

Keywords: Farm households, farm income, nonfarm income

Farm operators and their households quite often do not have full financial control over all of their production resources, nor are their financial activities limited to farming. On the one hand, this means that farm operator households make significant payments to other persons or may not receive all of the income of the farming operation they manage. On the other hand, many farm operator households receive income from other sources.

Compared to data on farm business finances, complete data on the financial position of farm operators and their households have not always been available. As a result, analysts have often resorted to simplifying assumptions about the relationships between people and farms. The more that is learned about the financial position of people associated with farms through improved sources of data, the more is learned about how diverse the links are between farm operator households and the farms they manage.

Recently, there has been an increased interest in an accurate measurement of the financial position of farm people vs.

farm businesses because of the large transfers of Government funds to the farm sector. During each of the last 4 years, direct Government payments to individuals in the farm sector exceeded \$10 billion.

Who Else Contributes Resources and Shares in the Returns from Agricultural Production?

Farm businesses of the past were likely to be owned and operated by a farm family, with the family providing most of the labor. That arrangement is much less common today, and even rare among the commercial farms that produce the bulk of agricultural commodities. Instead, farm operators have chosen to expand and/or share their risks by sharing the role of entrepreneur and manager with other individuals. Take land ownership, for example. In 1900, farm operators owned an average 68 percent of the land they operated, vs. 58 percent today.

Contracting to produce agricultural commodities or to simply market them is another example of how farm operators share risks and returns from production. The contractors are generally processors of basic commodities and have an interest in ensuring a continuous supply from the farm. In 1988, more than

4 percent of farm operators reported participating in some form of production or marketing contracting.

The terms of such contracts vary widely. Production contracting dominates in the poultry subsector and is on the increase in others, such as hogs. Under some production contracts, the contractor may actually make more of the critical farm management decisions than the farm operator. Marketing contracts are more common in the fruits and vegetables subsector and generally leave the farm operator with more autonomy.

The ways in which farm operators share the risks and returns of farming can be grouped into three general categories. First, the payments (or shares) to some of the individuals who provide farm businesses with production inputs are netted out of the farm's gross value of production, or gross income, as fixed amounts. This means that no matter how much the farm produces in a year, these individuals (or other businesses) receive an agreed-upon amount. To a farmer, this is basically the same as having to cover expenses for basic inputs, such as seed and fertilizer. For example, cash rents to landlords, interest expenses to banks, and the value of production sold under some contracts are

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all fixed amounts. In 1988, farm businesses paid out about \$5 billion to more than 500,000 landowners for the more than 250 million acres that were rented on a cash basis; \$14.5 billion were paid to lenders in interest expenses.

Second, other shares are netted out of the gross value of production, but the amounts depend on the level of production in a given year. The farmer benefits by sharing risks, but at a cost of having to share greater returns in high-yielding years. Share rent expenses to landlords and some marketing and production contracts fall into this category. When risks and returns are shared in this way, the persons providing the production inputs generally have more authority over how the farm is managed than when fixed returns are set prior to production.

In 1988, approximately 113 million acres were rented on a share basis, representing about 500,000 rental agreements. This represented about 10 percent of the production and covered about 3 percent of the variable production expenses. Landowners who rent out their land on a share basis are entitled to benefits under Government commodity programs if their land is enrolled in one of the seven commodity programs. Very little data are available on the financial position of these farmland owners, but as much as one-third of the direct payments may go to them. In 1988, that could have amounted to over \$4 billion.

A final way in which some persons share in the risk and returns of the farm business is through the legal form in which the farm is organized. This type of involvement generally means a complete sharing of the risks and returns with the farm operator. Approximately 13 percent of farms are organized as something other than the traditional sole proprietorship. Just under 10 percent are partnerships, 3 percent are incorporated, and the remainder are organized in other ways which the Census of Agriculture labels as abnormal farms, such as cooperatives or Indian reservations.

The Farm Operator Household's Share of the Returns

Interest expenses to banks and other lenders, as well as landlords' returns and expenses, are conceptually accounted for in the traditional farm income estimates.^{2/} The estimate is measured for the farm business. In the past, it was assumed that farm operators and their households received all the returns of the farm business. This was because the sole proprietorship farms dominated, and it was not known how much of the income of other types of farms actually went to farm operators. Further, because of the interest in the economic well-being of farm people and the recognition of off-farm sources of income, the total income of farm operator households traditionally has been calculated as the sum of the farm business income and the off-farm income of the farm operator household.

There are two problems with this simple calculation. First, more than just the farm operator shares in the net income of some farms. For example, the net income of the farm business is shared in the case of partnerships and corporations, although often all parties are part of the farm operator's household. Second, large farms are organized in such different ways from the traditional farm (one that is not a nonfamily corporation, cooperative, or managed by a hired manager) that the well-being of the farm operator and his or her household is no longer meaningful. For this group of farms, USDA does not attempt to collect data on the off-farm income of the farm operator and household. For example, farm operators of nonfamily farm corporations or cooperatives, or hired managers who do not share in the

net income of the farm business, are not of the same interest as the traditional farm operator for questions relating to the well-being of farm people.

New data available for 1988 indicated that for about 92.5 percent of farms the farm operator household received all of the net income of the farm business. On the other 7.5 percent, there were 2.4 households per farm who shared in the net income of the business.^{3/} Across all farms this means that there were about 1.11 households who shared in the net income for each farm (table C-1).

The farm operator household's average cash farm income was \$4,706, compared with \$5,857 for traditional farm businesses and \$6,189 for all farms. The net incomes of farm businesses are much more likely to be shared on the larger, higher-income farms than on the smaller farms. For example, the portion of net cash income that went to farm operator households on the largest farms (sales class of \$500,000 or more) was 79.5 percent, compared with 97.4 percent on the small farms (sales class of \$40,000 or less).

Nonfarm Income Received by the Farm Operator Household

Since official statistics began being kept on the involvement of farm operators in the nonfarm labor market, the general trend has been upward (figure C-1). In 1929, 30 percent of farm operators worked at least some days off their farm, compared with 53 percent in 1987. Moreover, the greatest increase in the number of operators working off the farm was for those who worked 200 or more days per year off their farm.

In 1960, USDA began calculating the average off-farm income of farm oper-

2/ However, conceptual problems associated with commodities produced under contract remain in the accounting of costs and returns. The effects of these problems likely overstate net farm income to farm businesses. In addition, some measurement problems exist in the accounting for the costs and returns of landlords, largely because data on landlords are collected infrequently. Very little is known about the financial position of these parties and, in particular, how much they net from their involvement in agricultural production.

3/ Data are from the 1988 Farm Costs and Returns Survey (FCRS). FCRS income estimates will not necessarily agree with those published elsewhere because of differences in data collection approaches. The FCRS represents 1.7 million farms, compared to USDA's official estimate of 2.1 million. Net farm income, as defined in this article, equals all cash income less cash expenses and depreciation.

Table C-1--Households per farm and average farm incomes of all farms and traditional farms, by farm size, 1988 1/

	Size of farm					All farms
	Less than \$40,000	\$40,000-\$99,999	\$100,000-\$249,999	\$249,999-\$499,999	\$500,000 or more	
All farms						
Households per farm (no.)	1.05	1.11	1.22	1.47	1.61	1.11
Farm income of business (\$)	2,742	4,870	19,881	50,325	169,561	6,189
Traditional farms						
Farm income of business (\$)	3,008	5,470	20,133	50,201	170,556	5,857
Farm income of operator household (\$)	-2,931	5,270	18,386	41,294	135,613	4,706
Operator household's share (percent)	97.4	96.3	91.3	82.2	79.5	80.3

1/ Traditional farms exclude the farm operator households associated with the 1 percent of farms organized as nonfamily corporations, cooperatives, or managed by an operator who does share in the net income of the business.

ator households. Since that time, off-farm income has increased, bringing more stability to the incomes of farm operator households in low farm income years. Nevertheless, off-farm income has remained a fairly constant share of total incomes, with the share decreasing as farm size increases. The average off-farm income for farm operator households in 1988 was \$28,829, compared with \$4,706 from farm sources (when depreciation is included with expenses).

Another way to look at off-farm income is to measure how many farm operator households either earned more off their farm than on their farm or, in the case of farm losses, how many earned more off their farm than they lost on their farm. By this approach, two-thirds of all farm operator households in 1988 were more dependent on off-farm income than farm income. These households are more likely to be operators of smaller farms who, on average, lost income on the farm, but whose off-farm income averaged about \$40,000.

Almost all farm operator households receive some income from off-farm sources. In 1988 about 90 percent did

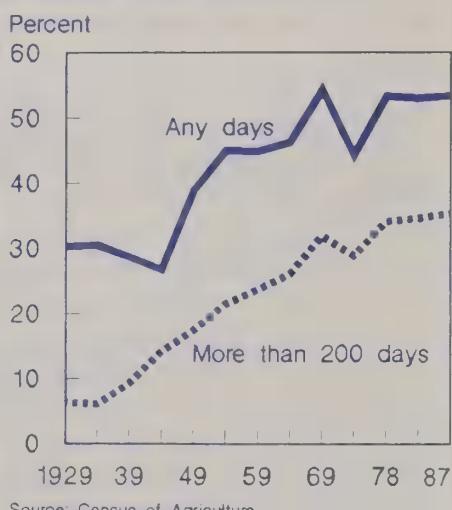
so. More than half received income from wages and salaries or nonfarm businesses. The off-farm income of spouses averaged \$5,445, or about 20 percent of the total household income.

How Does the Income of Farm Operator Households Compare to All U.S. Households?

The average incomes of farm operator households are very close to the average incomes of all U.S. households. However, the incomes of farm operator households are much more unevenly distributed (figure C-2). In large part this is due to the nature of farming, where success is subject to the vagaries of weather.

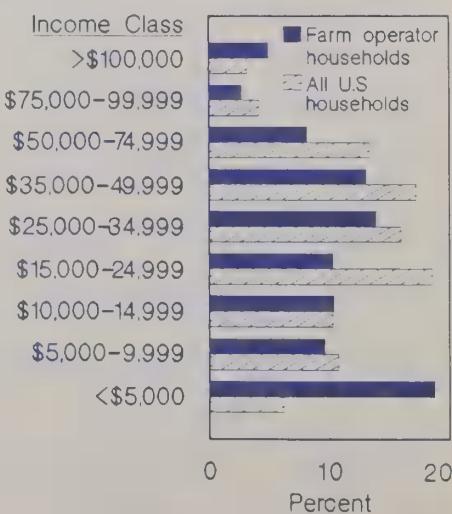
The average 1988 income of farm operator households was \$33,535, compared with \$34,017 for all U.S. households. However, 5 percent of farm operator households had incomes above \$100,000, compared to 3.2 percent of all U.S. households. At the other end of the distribution, 18.8 percent of farm operator households had incomes below \$5,000, compared with only 6.2 percent of all U.S. households.

Figure C-1
Percent of Farm Operators Working Off Farm



Source: Census of Agriculture

Figure C-2
Percent of Households By Income Level, 1988



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Appendix table 1--Farm income, assets and debt, and returns 1/

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Income and total returns						
1. Gross farm income 2/	156	151	163	168	181	182 to 186
2. Wages and perquisites to hired labor	9	9	10	10	11	10 to 12
3. Other operating expenses, excluding interest	76	70	73	83	88	87 to 91
4. Capital consumption	17	16	14	15	15	15 to 16
5. Net income from assets and operators' labor and management (1-2-3-4)	54	57	65	61	68	66 to 70
6. Income imputed to operators' labor and management	26	26	27	29	31	30 to 34
7. Residual income to assets (5-6)	27	31	38	33	36	35 to 39
8. Real capital gain to assets	-80	-45	33	48	19	0 to 6
9. Total return from assets (7+8)	-53	-14	71	80	55	38 to 42
10. Interest paid	18	16	15	15	14	13 to 15
11. Real capital gain to debt	6	4	7	5	6	5 to 7
12. Total return to equity (9-10+11)	-65	-26	63	71	47	29 to 33
13. Real capital gain to assets and debt (8+11)	-74	-41	40	53	26	7 to 11
14. Residual income to equity (12-13)	9	14	23	18	22	21 to 25
Balance sheet 3/						
15. Assets	791	747	783	828	853	870 to 880
16. Debt	175	155	143	138	136	132 to 138
17. Equity (15-16)	615	592	640	690	717	735 to 745
Percent						
Rates of return and interest rates						
18. Rate of return on assets (ROA) (7/15)	3.3	4.0	5.0	4.1	4.3	4 to 5
19. Real capital gain on assets (8/15)	-9.6	-5.8	4.3	5.9	2.2	0 to 1
20. Total real return on assets (18+19)	-6.4	-1.9	9.3	10.0	6.5	4 to 5
21. Av. interest rate paid on debt (10/16)	9.8	9.8	10.0	10.4	10.5	10 to 11
22. Real capital gains on debt (11/16)	3.2	2.5	4.8	3.8	4.5	4 to 5
23. Real cost of debt (21-22)	6.6	7.3	5.2	6.6	6.0	6 to 7
24. Rate of return on equity (ROE) ((7-10)/17)	1.5	2.4	3.7	2.7	3.1	3 to 4
25. Real capital gain on equity ((8+11)/17)	-11.4	-6.7	6.5	8.0	3.5	1 to 2
26. Total real return on equity (24+25)	-10.0	-4.4	10.3	10.7	6.6	4 to 5
27. Net return on assets (NROA) (18-21)	-6.5	-5.9	-5.0	-6.3	-6.2	-6 to -7
28. Spread (20-23) 4/	-12.9	-9.2	4.1	3.4	.5	-1 to -2

F = Forecast. 1/ Numbers may not add due to rounding. 2/ Excludes operator dwellings. 3/ Excludes operator households and CCC activity. 4/ When total real rate of return on assets exceeds total real cost of debt, debt financing is profitable.

Appendix table 2--Farm income and cash flow statement, 1985-90

Item	:	1985	1986	1987	1988	1989F	1990F
Billion dollars							
Farm income sources:							
1. Cash receipts		144.1	135.5	139.5	151.4	158	162 to 168
Crops 1/		74.3	64.0	63.8	72.6	74	77 to 81
Livestock		69.8	71.5	75.7	78.9	84	84 to 87
2. Direct Government payments		7.7	11.8	16.7	14.5	11	■ to 10
Cash Government payments		7.6	8.1	6.6	7.1	9	8 to 9
Value of PIK commodities		.1	3.7	10.1	7.4	2	0 to 1
3. Farm-related income 2/		5.0	5.1	5.8	5.7	6	5 to 7
4. Gross cash income (1+2+3) 3/		156.9	152.5	162.0	171.6	175	176 to 183
5. Nonmoney income 4/		11.8	10.6	10.0	10.3	10	9 to 11
6. Realized gross income (4+5)		168.7	163.1	172.0	181.9	185	187 to 193
7. Value of inventory change		-2.4	-2.7	-.4	-4.3	6	2 to 6
8. Total gross income (6+7)		166.4	160.4	171.6	177.6	191	191 to 197
Production expenses:							
9. Cash expenses 5/ 6/		110.2	100.7	107.5	114.4	121	121 to 124
10. Total expenses		134.0	122.4	128.0	135.0	142	142 to 147
Income statement:							
11. Net cash income: 1/ 6/							
Nominal (4-9)		46.7	51.8	54.5	57.2	54	55 to 59
Deflated (1982\$) 7/		42.1	45.5	46.4	47.2	43	42 to 46
12. Net farm income: 1/							
Nominal total net (8-10)		32.4	38.0	43.6	42.7	49	47 to 51
Deflated (1982\$) 7/		29.2	33.4	37.2	35.2	38	36 to 40
13. Off-farm income		42.6	44.6	46.8	51.7	54	56 to 58
Other sources and uses of funds:							
14. Change in loans outstanding 6/		-15.6	-20.0	-12.0	-4.7	-3	-2 to 1
Real estate		-6.0	-9.0	-7.5	-4.4	-2	-2 to 0
Nonreal estate 8/		-9.6	-11.0	-4.6	-.3	0	0 to 2
15. Rental income and monetary change		8.8	7.8	6.8	8.5	8	7 to 9
16. Gross cash flow (11+14+15)		39.9	39.6	49.2	61.0	59	59 to 71
17. Capital expenditures 6/		9.2	8.5	9.8	10.2	12	10 to 14
18. Net cash flow (16-17) 1/ 6/		30.7	31.2	39.4	50.8	48	49 to 57

F = Forecast. Totals may not add due to rounding. 1987 and 1988 expenses include preliminary revisions from the recently-published 1987 Census of Agriculture. 1/ Includes net CCC loans. 2/ Income from custom work, machine hire, farm recreational activities, forest product sales, and misc. sources. 3/ Numbers in parentheses indicate components required to calculate ■ given item. 4/ Value of home consumption of farm products and imputed rental value of farm dwellings. 5/ Excludes depreciation and hired labor perquisites. 6/ Excludes farm households. 7/ Deflated by the GNP implicit price deflator. 8/ Excludes CCC loans.

Appendix table 3--Relationship of net cash to net farm income

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Gross cash income	156.9	152.5	162.0	171.6	175	176 to 183
Minus: Cash expenses	110.2	100.7	107.5	114.4	121	121 to 124
Equals: Net cash income	46.7	51.8	54.5	57.2	54	55 to 59
Plus: Nonmoney income:						
Gross rental value of dwelling	10.9	9.7	9.2	9.3	9	8 to 10
Value of home consumption	.9	.9	.8	1.0	1	0 to 1
Value of inventory change	-2.4	-2.7	-.4	-4.3	6	2 to 6
Minus: Noncash expenses:						
Depreciation & accidental damage	20.8	18.9	17.7	17.7	18	18 to 20
Labor perquisites	.5	.4	.5	.5	1	0 to 1
Minus: Household expenses 1/	2.4	2.4	2.2	2.3	2	2 to 3
Equals: Net farm income	32.4	38.0	43.6	42.7	49	47 to 51

F = Forecast. Totals do not add due to rounding. 1987 and 1988 expenses include preliminary revisions from the recently-published 1987 Census of Agriculture. 1/ Includes expenses related to operator dwelling.

Appendix table 4--Cash receipts, 1985-90

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Crop receipts: 1/						
Food grains	9.0	5.6	5.6	7.7	8	8 to 10
Wheat	7.9	4.9	5.0	6.4	7	6 to 9
Rice	1.0	.7	.6	1.2	1	1 to 2
Feed grains and hay	22.5	17.2	13.1	15.3	17	19 to 21
Corn	16.9	12.6	8.5	10.1	11	13 to 15
Sorghum, barley, and oats	3.3	2.4	2.1	2.3	2	2 to 3
Hay (all)	2.3	2.2	2.5	2.9	3	3 to 5
Oil crops	12.5	10.6	11.2	13.7	12	11 to 13
Soybeans	11.2	9.2	9.9	12.4	11	10 to 11
Peanuts	1.0	1.1	1.0	1.1	1	1 to 2
Cotton lint and seed	3.7	3.6	4.1	4.7	5	4 to 6
Tobacco	2.7	1.9	1.8	2.0	2	2 to 3
Fruits and nuts	6.8	7.2	8.3	8.9	9	8 to 10
Vegetables	8.6	8.8	9.7	9.8	10	10 to 12
Greenhouse & nursery	5.4	5.9	6.6	6.9	7	6 to 8
Other crops 1/	3.2	3.3	3.8	3.7	3	3 to 5
TOTAL CROPS	74.3	64.0	63.8	72.6	74	77 to 81
Livestock receipts:						
Red meats	38.6	39.1	44.3	46.0	48	48 to 52
Cattle and calves	29.1	28.9	33.4	36.3	37	36 to 40
Hogs	9.0	9.7	10.3	9.2	10	10 to 12
Sheep and lambs	.5	.5	.5	.5	1	0 to 1
Poultry and eggs	11.2	12.7	11.5	12.9	14	14 to 16
Broilers	5.7	6.8	6.2	7.4	8	7 to 9
Turkeys	1.8	2.0	1.7	2.0	2	1 to 3
Eggs	3.3	3.5	3.2	3.1	3	2 to 4
Other poultry	.5	.4	.4	.4	*	0 to 1
All dairy products	18.1	17.8	17.7	17.7	19	16 to 20
Other livestock	1.9	1.9	2.2	2.3	2	1 to 3
TOTAL LIVESTOCK	69.8	71.5	75.7	78.9	84	84 to 87
TOTAL RECEIPTS	144.1	135.5	139.5	151.4	158	162 to 168
Program 2/	67.6	54.5	50.9	60.5	70	70 to 75
Non-program 3/	76.6	80.8	88.3	90.9	88	90 to 95

F = Forecast. * = Less than \$500 million. Totals may not add due to rounding. 1/ Includes sugar, seed, and other misc. crops. 2/ Receipts from commodities directly supported by farm programs. 3/ Commodities not receiving direct support.

Appendix table 5--Farm income distribution by enterprise type 1/

Item	Crops						Livestock		
	Total	Cash	grain 2/	Tobacco	Cotton	Fruit, nut, vegetables	Total	Red meat	Dairy
	crops	grain				vegetables	livestock		
Thousands									
Number of farms									
1988	812	408	105	24	88	1,385	1,113	194	
1989F	804	404	104	24	87	1,369	1,101	192	
1990F	795	399	103	24	86	1,355	1,089	190	
Income									
1. Cash receipts:							Million dollars		
Crops									
1988	65,720	29,970	2,140	4,290	16,330	6,840	5,340	1,010	
1989F	67,260	30,410	2,230	4,570	16,710	6,880	5,350	1,030	
1990F	71,700	33,150	2,560	4,730	17,400	7,380	5,720	1,110	
Livestock									
1988	3,960	2,920	136	102	70	74,900	40,310	19,190	
1989F	4,120	3,040	140	105	73	79,670	41,890	20,880	
1990F	4,380	3,260	148	108	74	81,130	43,960	19,770	
2. Direct Gov't payments:									
1988	9,480	7,500	100	900	110	5,020	3,730	1,100	
1989F	7,110	5,630	80	680	80	3,770	2,800	830	
1990F	6,040	4,780	70	580	70	3,200	2,380	700	
3. Gross cash income: 3/									
1988	81,400	41,770	2,430	5,430	16,630	90,230	51,310	21,780	
1989F	80,800	40,490	2,500	5,500	17,000	93,900	52,030	23,230	
1990F	84,450	42,610	2,840	5,550	17,680	95,300	54,050	22,070	
4. Cash expenses:									
1988	44,650	22,300	1,840	2,930	5,940	69,710	42,760	19,950	
1989F	47,230	23,810	1,940	3,120	6,200	73,340	45,030	20,970	
1990F	48,280	24,240	1,990	3,230	6,360	74,070	45,560	21,150	
5. Net cash income:									
Current dollars 4/									
1988	36,750	19,460	590	2,510	10,690	20,520	8,550	1,820	
1989F	33,570	16,680	560	2,370	10,800	20,550	6,990	2,260	
1990F	36,170	18,360	850	2,320	11,310	21,230	8,490	930	
Deflated (1982 \$)									
1988	30,300	16,050	490	2,070	8,810	16,920	7,050	1,500	
1989F	26,580	13,200	450	1,880	8,560	16,270	5,540	1,790	
1990F	27,630	14,030	650	1,780	8,640	16,220	6,480	710	
Balance Sheet 5/									
6. Farm assets:									
Real estate									
1988	239,300	110,800	13,300	8,400	45,400	375,800	287,700	61,400	
1989F	247,500	114,600	13,700	8,700	47,000	388,700	297,600	63,600	
1990F	254,100	117,600	14,100	8,900	48,200	398,900	305,400	65,200	
Nonreal estate									
1988	81,500	47,300	3,900	4,700	8,000	132,900	88,500	32,300	
1989F	82,800	48,100	4,000	4,700	8,100	135,200	90,000	32,900	
1990F	83,400	48,400	4,000	4,800	8,200	136,100	90,600	33,100	
7. Total liabilities:									
1988	63,300	37,900	1,700	3,300	6,300	75,100	47,500	22,600	
1989F	62,100	37,100	1,700	3,200	6,200	73,600	46,500	22,200	
1990F	61,600	36,800	1,600	3,200	6,100	73,000	46,100	22,000	
Percent									
8. Debt-to-asset ratio:									
1988	20	24	10	25	12	15	13	24	
1989F	19	23	9	24	11	14	12	23	
1990F	18	22	9	23	11	14	12	22	

F = Forecast. Numbers may not add due to rounding. 1/ Farm types are defined as those with 50 percent or more of all sales accounted for by a specific commodity or commodity group. 2/ Includes farms earning at least half their receipts from sales of wheat, corn, soybeans, rice, sorghum, barley, oats, or a mix of cash grains.

3/ Equals 1 + 2 + farm related income. 4/ Equals 3 - 4. 5/ Excludes farm households.

Appendix table 6--Farm production expenses, 1985-90

Item	1985	1986	1987	1988	1989F	1990F
	Billion dollars					
Farm-origin inputs						
Feed	30.3	28.9	33.8	38.4	41	38 to 42
Livestock	18.0	16.2	18.9	22.5	24	21 to 25
Seed	9.0	9.7	11.8	12.8	13	12 to 15
	3.4	3.0	3.0	3.1	4	3 to 5
Manufactured inputs	21.0	17.0	18.2	19.4	22	21 to 24
Fertilizer	7.3	5.8	6.2	7.0	8	7 to 9
Fuels and oils	6.6	4.8	5.0	5.1	6	5 to 7
Electricity	2.2	1.9	2.4	2.6	3	2 to 4
Pesticides	5.0	4.5	4.6	4.7	5	5 to 6
Total interest charges	18.7	16.9	15.5	15.2	15	14 to 16
Short-term interest	8.8	7.8	7.3	7.3	8	7 to 9
Real estate interest	9.9	9.1	8.2	7.9	7	6 to 8
Other operating expenses	30.7	29.8	31.5	32.3	34	33 to 37
Repair and maintenance	6.4	6.4	6.5	6.9	7	7 to 8
Labor expenses	9.8	9.9	10.8	11.2	11	10 to 12
Machine hire & custom work	2.2	1.8	2.0	2.2	2	2 to 3
Animal health	1.2	1.2	1.2	1.2	1	1 to 2
Marketing, storage & transportation	4.1	3.7	3.8	3.3	4	4 to 5
Miscellaneous operating expenses	6.8	6.3	6.8	7.5	8	8 to 9
Other overhead expenses	33.2	29.8	29.1	29.6	31	31 to 33
Capital consumption	20.8	18.9	17.7	17.7	18	18 to 20
Taxes	4.2	4.1	4.3	4.4	4	4 to 5
Net rent to nonoperating landlords	8.2	6.7	7.1	7.5	8	8 to 9
TOTAL PRODUCTION EXPENSES	134.0	122.4	128.0	135.0	142	142 to 147
Cash expenses 1/	110.2	100.7	107.5	114.4	121	121 to 124

F = Forecast. 1987 and 1988 expenses include preliminary revisions from the recently-published 1987 Census of Agriculture. 1/ Cash expenses equal total expenses minus depreciation, operator dwelling expenses, and noncash labor benefits.

Appendix table 7a--Balance sheet of the farming sector, excluding operator households, December 31

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Farm assets	790.6	747.1	783.4	828.1	853	870 to 880
Real estate 1/	599.3	558.7	584.8	615.1	636	650 to 660
Livestock and poultry	46.3	47.8	58.0	65.5	70	68 to 72
Machinery and motor vehicles	88.5	86.3	84.5	85.4	87	86 to 90
Crops stored 2/	23.6	19.1	20.9	26.2	24	21 to 25
Financial assets 3/	33.0	35.2	35.2	35.9	36	36 to 38
Farm debt	175.1	155.1	143.1	138.4	136	132 to 138
Real estate 4/	97.6	88.6	81.1	76.7	74	71 to 75
Nonreal estate	77.5	66.6	62.0	61.7	61	60 to 64
Total farm equity	615.5	591.9	640.3	689.7	717	735 to 745
Percent						
Selected ratios:						
Debt-to-asset	22.1	20.8	18.3	16.7	16	15 to 16
Debt-to-equity	28.5	26.2	22.3	20.1	19	18 to 19
Debt-to-net cash income	375.0	299.0	248.0	242.0	251	230 to 240

F = Forecast. 1/ Excludes value of operator dwellings. 2/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 3/ Excludes time deposits and savings bonds. 4/ Includes CCC storage and drying loans.

Appendix table 7b--Balance sheet of the farming sector, including operator households, December 31

Item	1985	1986	1987	1988	1989F	1990F
Billion dollars						
Farm assets	890.0	848.5	891.9	943.6	974	1,000 to 1,010
Real estate	650.0	606.0	633.5	665.8	689	705 to 715
Livestock and poultry	46.3	47.8	58.0	65.5	70	68 to 72
Machinery and motor vehicles	93.3	90.7	89.9	90.7	91	91 to 95
Crops 1/	23.6	19.1	20.9	26.2	24	21 to 25
Household goods	27.8	30.5	32.9	37.0	41	43 to 47
Financial assets	49.0	54.4	56.7	58.4	59	59 to 63
Farm debt	187.9	166.6	153.7	148.5	145	141 to 147
Real estate 2/	105.7	95.9	87.7	83.0	80	77 to 81
Nonreal estate	82.2	70.8	66.0	65.6	65	63 to 67
Total farm equity	702.1	681.9	738.2	795.1	829	850 to 860
Percent						
Selected ratios:						
Debt-to-asset	21.1	16.4	17.2	15.7	15	14 to 15
Debt-to-equity	26.8	13.2	20.8	18.7	18	16 to 18
Debt-to-net cash income	402.0	322.0	266.0	259.0	269	250 to 260

F = Forecast. 1/ Non-CCC crops held on farm plus value above loan rate for crops held under CCC. 2/ Includes CCC storage and drying loans.

Appendix table 8--Farm financial ratios: liquidity, solvency, profitability, and financial efficiency

Farm financial ratios:	: 1982	1983	1984	1985	1986	1987	1988	1989F	1990F
Liquidity ratios:									
Household debt service coverage 1/	2.77	2.75	2.87	3.46	4.04	4.74	5.16	5.1	5.4 to 5.5
Farm business debt service coverage 2/	1.74	1.70	1.76	2.12	2.49	2.94	3.06	2.9	3.0 to 3.2
Debt servicing 3/	.22	.22	.22	.19	.18	.15	.14	.1	.1 to .2
Times interest earned ratio 4/	2.26	1.80	2.72	2.96	3.49	4.32	4.11	4.5	4.6 to 4.7
Solvency ratios:									
Debt/asset 5/	19.9	20.2	21.8	22.1	20.8	18.3	16.7	15.9	15 to 16
Debt/equity 6/	24.9	25.3	27.9	28.5	26.2	22.3	20.1	18.9	18 to 19
Profitability ratios:									
Return on equity 7/	-.3	-1.7	.7	1.5	2.4	3.7	2.7	3.1	3 to 4
Return on assets 8/	1.9	.8	2.8	3.3	4.0	5.0	4.1	4.3	4 to 5
Net farm to gross cash farm income 9/	15.6	8.4	20.8	20.7	24.9	29.1	24.9	27.7	26 to 28
Financial efficiency ratios:									
Gross ratio 10/	74.9	75.5	75.1	70.2	66.0	64.4	66.6	63.1	61 to 63
Interest to gross cash farm income 11/	13.9	13.7	13.1	11.4	10.6	9.2	8.5	8.3	7 to 8
Asset turnover 12/	15.5	15.8	15.8	17.0	18.8	19.8	21.2	21.3	20 to 22
Net cash farm income to debt ratio 13/	31.6	30.1	30.8	35.3	41.2	48.7	51.1	49.9	52 to 54
Ratio									
Financial leverage index 14/	-.15	-2.06	.26	.44	.60	.76	.67	.7	.7 to .8

F= Forecast. 1/ Assesses the ability of farm sector households to repay both principal and interest. 2/ Assesses the ability of farm businesses to repay both principal and interest. 3/ Indicates the proportion of gross cash farm income needed to service debt. 4/ Shows the farm sector's ability to service debt out of net income. 5/ Shows the proportion of all assets that are financed with debt. 6/ Measures the relative proportion of funds provided by creditors(debt) and owners(equity). 7/ Measures the ability of farm sector management to realize an adequate return on the capital invested by the owner(s). 8/ Measures how efficiently managers use farm assets. 9/ The profit margin indicates profits earned per dollar of gross income. 10/ Gives the portion of gross cash farm income absorbed by production expenses (claims on farm businesses). 11/ Gives the proportion of gross cash farm income committed to interest payments. 12/ Measures the gross farm income generated per dollar of farm business assets. 13/ Indicates the burden placed on net cash farm income to retire outstanding debt. 14/ Indicates whether or not the use of financial leverage is beneficial.

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